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CAMBRIDGE CAMEOS

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CAMBRIDGE CAMEOS

by

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Preface

THIS volume of Essays covers a considerable variety of subjects, whose one connecting link is that they are all associated with Cambridge—" Our Dear Cambridge " as Cowley has it. Their subject matter extends over a considerable period of time, from the fourth Egyptian dynasty down to the present day: but in every case it is something or someone in Cambridge that has been the starting-point of the several chapters.

In my sketches of Professor Newton and of the late Registrary I have tried to reproduce Cambridge and its prominent men as I remember them from the year I came up in 1880 to the end of the first decade of the present century. They were men who wielded a great influence in different phases of University life, and of a type which has almost disappeared but is well worthy of record. The articles on the customs, institutions, and buildings of the University and of my own college have involved a considerable amount of research. They again are records of things which seem to me worth preserving.

The chapters on the Insignia of the University, Christ's College, Cambridge, the Hunting of the

Yale, the University Library, and the Fauna of King's College, Cambridge, appeared in the pages of *Country Life* ; the essay on Charles Darwin is modified from an address I gave as President of the Zoological Section of the British Association at Winnipeg in 1909; the article on Professor Newton is a chapter I wrote for the *Life* of the Professor by Mr. A. F. R. Wollaston; and the chapter on J. W. Clark is an extract from my own biography of the late Registrary. The account of E. A. Wilson appeared in the pages of the *Cornhill Magazine*. I am very grateful to the editors and the owners of these various publications for their permission to reprint them. The remaining articles have not appeared before.

In the writing of these essays I have had the help of many experts. One of the advantages of a University like Cambridge is that there is always an expert " round the corner." But I wish to add that for whatever errors and mistakes have slipped into my lines they are in no case responsible; and I tender them all, for they are too numerous to recount, my grateful thanks.

A. E. SHIPLEY.

Christ's College Lodge,
Cambridge. 1924.

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CHAPTER I

EAST ANGLIA AND THE UNIVERSITY IN EAST ANGLIA

THE HEADING OF MY ARTICLE AT once raises the question whether Cambridge was originally in East Anglia. The exact westerly bounds of this Kingdom undoubtedly varied from time to time, and undoubtedly Cambridge stood at the extreme edge of the kingdom. Where Mercia touched East Anglia, there, at one point, stood the town of Cambridge.

In an extremely interesting and able article on the dual origin of the town of Cambridge, by the Master of Jesus, the question as to the origin of the town is cleverly analysed. Long before the time when King John granted the town to the burgesses in farm it had been recorded as one and indivisible. Already in the Doomsday Book for fiscal and military purposes Cambridge was clearly a single unit, but, going back some centuries earlier there is, as the learned Master has pointed out, very considerable evidence that the town as it existed then was compact of two distinct halves. In the Middle Ages each town possessed a large area of ground known as the " Field." This was owned and tilled by the townsmen in a certain rotation.

The fields were unhedged and the strips belonging to each owner separated one from the other by grass balks. A very clear indication of the duality of the origin of the University town is the fact that in early times it possessed two such fields: that on the easterly side of the town commonly and collectively known as the Barnwell Field and bounded by the parishes of Ditton, Cherryhinton, and Trumpington; the other, the westerly, or perhaps we may say Mercian, was known as the Cambridge Field, and was bounded by Grantchester, Coton, Madingley, Girton, and Chesterton. Each of these fields was regarded as an agricultural unit, each had its own pieces of common pasture, and each seems to have been cultivated on the usual three-field system. Books exist recording the names of the several owners of these two fields, their boundaries, and the church to which each property was tithed. Such a field was the field of a village or township, and, as no township was without a field, so none had more than one. Hence the existence of two fields connected with the ancient town clearly indicates that at one time there were two towns not yet joined up into one. As Mr. Gray says, in the eighth century we may conclude there were two townships in Cambridge, each a civil unit and each possessed of its separate field.

The town of Cambridge existed before the county of Cambridgeshire, which came into existence as a result of the Danish occupation. Cambridgeshire, which first had its being under the Danelaw, was an artificial aggregation of certain hundreds centred about the town; it was not the home of a race as were Norfolk, Suffolk, and Essex. It is, as we all know, peculiarly anomalous in its constitution; the Isle of Ely is in it, but by no means altogether of it; its county official, the sheriff, it shares with Huntingdonshire. When Henry I established the See of Ely the bishop's province corresponded with the county of Cambridgeshire, and yet certain parishes, composing the Deanery of Fordham between the Devil's Dyke and the Suffolk border, remained subject to the Bishop of Norwich until some eighty years ago. In the words of the Master these singularities have a common explanation which is contained in the answer to the question: Was Cambridgeshire in East Anglia?

Another line of argument which Mr. Gray follows is the termination of town or village names. He points out that the termination "ham" is almost universal in the north-east hundreds of the county, whereas the converse is the case in the southern and western hundreds. The "ham" seems to have projected out from the side of Norfolk and Suffolk, while the termination "ton"—

they both mean no more than dwelling—is undoubtedly Mercian in origin.

"Without," as the Master says, "insisting too precisely that every Cambridgeshire -ham was East Anglian and every -ton Mercian, the tendency of the evidence of the village names goes decisively to show that the impact of the nationalities was at Cambridge." Cambridge stood at the head of the navigable river and commanded the ford where the three ancient roads from East Anglia, Essex, and London converged at the passage of the Cam. As the East Anglians appear to have penetrated Cambridgeshire as far as Teversham, perhaps they settled in the southern part of the site of the town, while the Mercians occupied the other extremity of it.

The town of Cambridge is in fact a border or frontier town. Beyond it to the north and to the east stretches the great fen, even now in many districts, in spite of drainage, impassable to heavy traffic. Till recent times the chief connexion of the borough with the outside world was through the port of King's Lynn and thence up the river. Along this stream flowed the products of the neighbouring counties and also of the Continent. People are still living who remember the barges being poled up the Backs crowded with merchandise for discharge at the numerous hythes which then lined the banks of the Cam, now given over to Canadian canoes and within the last few years to punts.

Lying as it does on the edge of the fens, Cambridge is the last city on the eastern side of England that could be passed through on going to the far north, and even in prehistoric times, as now, it was the centre of numerous lines of communication. A little to the west lay the Ermine Street, the road from London to York, corresponding with the Old North Road of our times. A little to the east lay the Pedder Way, running from London to Brancaster, once an extensive port, the chief industry of which at the present time seems to be golf. But more important still were the two great roads which crossed in the heart of the University town, the Via Devana and the Akerman Street. The former ran from Colchester to Chester, corresponding roughly with the Hills Road, Bridge Street, and Huntingdon Road, hence running north-west to Godmanchester, Leicester, and so on to Chester. Crossing this almost at right angles is the Akerman Street, which started at Brancaster and ran at a constantly diverging angle with the Pedder Way into the centre of Cambridge, and was thence continued south-west via Cirencester to Bath. North-east of the town the Akerman Street is represented by certain grassy tracts lost in the neighbouring fields, known as the King's Hedges, very pleasant to ride over, and continuing further it can be traced through Ely, Littleport, Denver, till it reaches the Norfolk coast. Passing through Cambridge it is said to correspond with the Barton Road, whence it is continued to Ampthill in Bedfordshire, and so farther west to Bath. Presumably these streets crossed each other just north of the Cam, and not far from the present Magdalene Bridge.

Cambridge thus became the centre of a considerable traffic, which could pass along numerous diverging routes to various parts of the country, and even to-day its railway system enables it to speed its travellers in a dozen different directions from the longest station in the kingdom.

But the dominating historic feature in the position of the town was that it commanded a very important ford, replaced later by a bridge corresponding in position more or less with the Magdalene Bridge of the present day. Across this ford and later across this bridge passed all the merchandise conveyed from the Midlands to the eastern counties, and *vice versa*. For the defence of this passage an artificial mound—Castle Hill—had been raised, probably " in those troublesome times when the earlier invaders who had conquered the Romanized British were in turn attacked by new comers from the Continent."

Near it William the Conqueror erected on the rising ground close to the present Court House a castle, the foundations of which he laid in 1068 on a site where houses mentioned in the Doomsday Book once stood. This stronghold dominated the only passage where the Cam could be crossed by anything like a large force.

To consider but one instance of the strategic importance of the Cambridge “great bridge”: in 1216 King John, then fighting fiercely for what he considered his rights against the barons, was marching up and down the country with a rapidity only equalled by that of the German ex-Emperor. He had succeeded in relieving Windsor, then besieged by the barons, who broke up before his attack. Re-forming, they marched on Cambridge, hoping to cut the King and his army off at this strategic point, for here alone, as we have said, was the Cam passable for an army. It was to escape the barons, and he only just escaped them, that John undertook on the 19th September a forced march of seventy miles, from Hedingham in Essex to Stamford, and on his way he had to cross the Great Bridge of Cambridge. It was whilst on this expedition, having lost his baggage train in the rising tide of the Wash, that John finally entered Newark on Trent, where he died on the 18th October. A recent writer remarks: “If ever king did, he ‘died standing.' " Nevertheless, he was intensely unpopular with his people, and Matthew of Paris probably recorded the true sentiment of the day when he said: " Foul as hell is, it is defiled by the fouler presence of John."

The Mercians appear to have held that part of the town which dominated the ford or bridge, whereas the more civilized East Anglians occupied the southern half where, with the exception of Magdalene College, the University grew up.

Cambridge has with Huntingdon a common Sheriff, appointed alternately by each county. The Sheriff was the deputy of the Earl or Over-lord, and the Earls of Huntingdon and Cambridge in the twelfth century were the Scottish Kings, who inherited their dignity from Waltheof, Earl of Huntingdon and Northampton. Though he did not bear the name of Cambridge he had possessions in the county, and they were all on the Mercian side. This is a still further indication that Mercia was separated from East Anglia by the Cam and the old Ouse or West River. Edward the Elder recovered the county from the Danes in 921 and fixed its boundaries at the Devil's Dyke, but the earldom of Huntingdon remained distinct from the East Anglian portion, and the Isle of Ely retained a quasi-independence. It was not until the time of Edward I that the Scottish kings who had inherited the earldom of Huntingdon forfeited their rights.

* * *

We have thus endeavoured to show that the part of the town of Cambridge in which the University is situate was, at any rate for a time, East Anglian. From my point of view this matter is important, as I shall now proceed to show, what no East Anglian would for a moment doubt, that East Anglia is the most important centre for the production of genius and talent that exists in our small island.

My evidence is based on more than one or two investigations. The most complete and important of these is *The Study of British Genius*, by Havelock Ellis. This study was made possible by the publication of the *Dictionary of National Biography*, where the lives of some 30,000 eminent citizens of Great Britain and Ireland are recorded. Havelock Ellis carefully analyses these 30,000 biographies and came to the conclusion that 1,030 persons may be definitely classed as individuals of exceptional ability; practically speaking one in thirty. To some extent this estimate depended upon the length of the several biographies, and it is obvious that the material for such biography is much more abundant in recent times than in earlier times and amongst people who have written their memoirs than amongst people who show more praiseworthy reticence. He therefore revised his list, and then re-revised it according to the average standard that, in his opinion, should be allotted to each man or woman. Having prepared his final list he set before himself the problem of finding where each eminent person came from, and to what particular district his ancestors belonged. He was not content entirely with registering the birthplace, but took note of the birthplace of the parents, and even of the four grandparents, and whenever he could obtain certain knowledge of the latter the individual in question got four marks. When only the parents were recorded he got two marks. London he had to neglect altogether as, when the facts were sifted, he nearly always found that the parents were immigrants.

Acting on these lines he found that the distribution of ability amongst the nations was as follows:

English	659
Welsh	28
Scotch	137
Irish	63
Mixed British	97
Mixed British and Foreign	46

" Omitting for the moment the individuals of mixed ancestry, we find that 74.2 per cent. are

English, 3.1 Welsh, 15.4 Scotch, and 7.1 Irish. If we take the basis of the present population and regard the proportion of eminent persons produced by England as the standard, Wales has produced slightly less than her share of persons of ability, Ireland still less, and Scotland decidedly more than her share."

Wales was, of course, somewhat handicapped by the difficulty of her very trying language.

These statistics are, to a great extent, borne out by Mr. A. H. H. Maclean, who has shown in his *Where we get our Great Men*, London, 1900, that of some 2,500 British persons of ability belonging to the nineteenth century 70 per cent. are English, 18 per cent. Scotch, 10 per cent. Irish, and 2 per cent. Welsh. We thus find that, by taking a much lower standard of ability and confining ourselves to the most recent period, Scotland stands higher than ever, while Ireland benefits very greatly at the expense of both England and Wales, and very similar results are recorded in an analysis of British *Men of the Time*, made by Dr. (now Sir) Arthur Conan Doyle (*Nineteenth Century*, August, 1888).

As Mr. Havelock Ellis remarks, their results were arrived at on the crude test of birthplace, and here one should utter a word of caution. It is usually assumed that a man is born in one place, and yet if you listen to popular speakers, politicians, and others occupied in attracting the attention of their audiences, you will find that this is by no means the case. Alfred Newton, who was the first Professor of Zoology in Cambridge and a well-known East Anglian, for his father owned the Elveden property which passed into the hands of Dhuleep Singh, used to tell me that Charles Kingsley, at one time Fellow of Magdalene, was born in Scotland, Devonshire, or the West Indies according to the audience he was addressing. I once came across a little brochure entitled *On some of the more memorable birthplaces of Gladstone*, and in the opening chapter of a biography of that great statesman you read that Mr. Gladstone "was born more or less in Scotland." In preparing this address I have received great help from a list of members of the London Society of East Anglians, which the secretary, Mr. Chas. Fenton, was kind enough to send me. This includes a great number of distinguished names, and after each name and address in brackets and italics, is the name of the birthplace. I turned up the Rt. Hon. Lord Claud John Hamilton and found in italics and in brackets: (*Great Eastern Railway*). It seems a diffused sort of place in which to be born, but it supports my argument that you must not take too narrow a view of the birthplaces of East Anglians.

If you place in a list a number of eminent men and women selected on the basis of Havelock Ellis, Yorkshire, by far the largest county in England, comes first with 90 individuals, but Norfolk makes a very good second with 67. Devon has 56, Kent 51, and Suffolk 50. Cambridgeshire, one of the poorest and most sparsely populated counties in England, has but 15, yet it comes within one of Oxfordshire, one of Cumberland, and beats Surrey with 14, and Westmorland with 11.

At the present time it would be absurd to compare the ability per square mile of a county like Lancashire, covered as it is with great towns, with an agricultural country like East Anglia. On the other hand, it is only fair to remember that East Anglia was a populous centre of trade and manufacture at a time when Lancashire resembled Cumberland and Westmorland. Another difficulty that we have to recollect is that a county or district may have marked fluctuations in its power of producing genius. As Mr. Havelock Ellis puts it, Kent is a county which illustrates this. It stood high, but no longer stands high. The genius of Kent, which at the Renaissance was outstanding, seemed to disappear with the loss of the Royalist cause.

Kent was the stronghold for royalty in the Stuart times. Perhaps more than any other county it was associated with the Renaissance: Caxton belonged to the county, and it was the home of Marlowe and Lyly, the two teachers of Shakespeare, and also of Linacre and Harvey, who represent the leaders in anatomy and physiology of all time. It was also prolific in administrators, diplomatists, and soldiers. According to Havelock Ellis, when Charles fell Kent fell as regards the production of genius. Kent was close to London, and London may have absorbed the genius which, in other counties, would have been attributed to this county.

In his estimate of the amount of ability in ratio to 1,000 square miles, Rutland, the smallest of our counties, stands easily first with 40. Suffolk comes next with 33, Kent with 32, and Norfolk 31. In his estimate of the amount of ability during the nineteenth century in ratio of 100,000 inhabitants, Norfolk stands easily first with 5.3. Again, taking Havelock Ellis's criterion and applying it to women, the unit assigned to Norfolk is 9, to Suffolk 5, to Yorkshire 4, and to Kent 3.

I do not propose to consider in detail the eminent men who have sprung from East Anglia, but a few names may be mentioned: Bishop Andrewes, the two Bacons, Thomas Cavendish, Chaucer (?), Constable, Cotman, Cowper, Cranmer, Flaxman, John Fletcher, Gainsborough, William Gilbert, Grosseteste, the Lyttons, Nelson, the Newmans, Porson, Pusey, Ray, the Veres, Robert Walpole, and Wolsey. And amongst those who belong in part to this region are Airy, the Arnolds, Barrow, Bradlaugh, Colet, Gresham, Stephen Hales, Charles Lamb, the Martineaus, Sir Thomas More, Pater, Sir Thomas Smith, and Walsingham.

The character of the East Anglian is set forth in the following quotation:

" East Anglia is productive of great statesmen and great ecclesiastics; it is also the land of great scholars. At the same time nearly half the British musical composers and more than a third of the painters have come from this same region. It has no aptitude for abstract thinking, for metaphysics, but in concrete thinking, in the art of treating science philosophically, it is easily supreme. Its special character seems to be its humanity, its patience, its grasp of detail, its deliberate flexibility, combined with a profound love of liberty and independence. The characteristic English love of compromise is rooted in East Anglia. So typically English a statesman as Walpole, with his sound instincts in practical affairs, belonged to Norfolk, and Wolsey belonged to Suffolk. In spite, however, of the marked sanity and self-possession of the East Anglian, it may be added that while East Anglia has produced many of the best Englishmen it has also produced a considerable proportion of the worst. Those who figure in English history chiefly by virtue of their villainy do not appear in my list, but it is notable that many of the great men who have come down to us with a somewhat flawed reputation belong here; Bacon is a typical example of the first rank."

Next to Kent, to which we have perhaps paid too much attention, the second focus for the production of genius is, according to Havelock Ellis, the south-western counties of England, and, again above Kent, comes the border line, the Marches along the Welsh border. A very short consideration of these four foci for the production of English genius points to the fact that all four of them were in constant contact with foreign races: they are all border lands. East Anglia, the south-western counties, Kent, and the Welsh Marches were more in contact with other races than were the home counties, the midlands, or the north of England.

In East Anglia were large amalgamations of the original Britons, whom the Romans conquered, followed by a succession of colonists including Angles, Northmen, and Danes, the last being responsible for many a place-name in Norfolk. Later the centuries passed on, and the Flemish, French, and Dutch settled amongst us. The Dutch drained our fens; the French founded our woollen manufactures—worsted is indeed derived from the East Anglian place-name of Worstead. Altogether East Anglia was a Macedonia with a happier result.

There is no doubt that Professor Maitland was right when he stated that the first inter-University contest was one of lying. Cambridge claims a mythical foundation by " Cantaber," a Spanish king. Oxford alleged it was founded by King Alfred. More moderate historians consider that Sigebert, King of the East Anglians, founded our East Anglian University, and, till quite recently, he was, in somewhat cautiously worded sentences, commemorated in the service for benefactors. There is this much to be said for Sigebert, that, as I have shown, East Anglia was obviously the most educated part of Great Britain; but, in truth; nobody founded Oxford and nobody founded Cambridge: they grew up.

We know there was the nucleus of the University at Cambridge in the twelfth century, and before the beginning of the thirteenth century it was a recognized centre of study. It is true that it was not until 1318 that Cambridge received from Pope John XXII formal recognition as a " Studium Generale " or University, nevertheless teaching was going on here long before the foundation of any of the colleges.

The Mendicant Orders established themselves in Cambridge. First came the Franciscans in 1224 on the present site of Sidney Sussex College, then came the Carmelites who, about the middle of the century, settled on the present site of Queens' —previously they had been established at Newnham. In 1275 the Dominicans built a Friary where Emmanuel now stands, and the Augustinian Friars, towards the close of the century, took up their abode on the site of the Art Schools in Bene't Street.

The first college founded, that of Peterhouse, was started in 1284, just twenty years after the college of Merton at Oxford.

I do not propose to pursue at length the history of this ancient seat of learning. What I want to emphasize is that it has been a great glory to East Anglia, that it has given much to East Anglia, that it has received much from East Anglia, and that it is perfectly prepared to receive a great deal more.

CHAPTER II

CAMBRIDGE UNIVERSITY INSIGNIA AND CEREMONIES

THE VICE-CHANCELLOR OF CAMbridge University is appointed for one year, but he is usually re-elected once or twice. On resigning his post at half-past nine on October 1st at the end of his last year of office, he hands over to the custody of the Proctors, who in turn hand them to his successor, certain " insignia " or " regalia " associated with the office. These include (1) the Maces, (2) the Vice-Chancellor's Cup, and (3) two golden rings.

Maces were no doubt originally weapons of defence, but in modern times they have become merely symbols of authority or emblems of State. Their origin can be traced back to the simple wooden club. In his learned book on the *Esquire Bedells of the University of Cambridge* Dr. Stokes has figured the University seal of the thirteenth century showing an Esquire Bedell carrying a roughly hewn wooden mace; and in Sir Herbert Maxwell's translation of the Chronicles of Lanercost it is recorded that at the Battle of Halidon Hill, while the Scots were fleeing on foot, " the English pursued them on horse-back, felling the wretches as they flew in all directions with iron shod maces." The University maces only date back to the time of Charles II, but our Cambridge records show that maces were in use as long ago as 1276, for they are mentioned in an adjudication made that year by Hugh de Balsham, Bishop of Ely, and Founder of Peterhouse. Another example of their symbolic character is the fact that they are laid down "as the insignia of the dignities and privileges of the University at the feet of the Sovereign on the rare occasions when a monarch in person has honoured the University with a visit."

The three maces now described were presented to the University by George Villiers, Duke of Buckingham, who was Chancellor from 1626 to 1628. Two of the Buckingham maces are alike, measuring 4 ft. 5 in. in length, the diameter of the staff being 1.3 in. The third is shorter by 1 in., and is in some respects differently decorated. The head in each case bears on its upper surface the royal arms of the Stuart kings, surrounded by a rim of alternating fleur-de-lis and crosses patty. Between each is a ball on a point, like the pearls or balls and points of an English marquess's coronet. The hemisphere of the two similar maces is divided into four parts by upright pieces of Renaissance ornament. The space between this ornamentation is plain, but in the third mace it bears a rose, a fleur-de-lis, a thistle, and a harp and crown, but the harp has almost disappeared. This ornamental work is not *repoussé*, or pushed out, but *appliqué*, or laid on.

Mr. Cripps, in his well-known *Old English Plate*, mentions that in some cases the heads of maces can be unscrewed and used as cups, and this is, indeed, true of the heads of the very magnificent maces belonging to the Corporation of the town of Cambridge. These are very capacious. The heads of the University maces are firmly fixed and cannot be unscrewed. After all, they would not hold very much. As regards the stem of the University maces, the plain surface is relieved by engraved escallops taken from the donor's arms, and they are divided into six compartments by five rings; the upper and lower of these rings are plain, but the other three bear each a text taken from some Latin version of the Bible which does not seem yet to have been identified, and from other classical sources. The texts are as follows:

MOTTOES

Mace 1.

Dux erat super eos Jehovah cum eo. 1 Paral., 9, 20.

Factae sunt ei virgae solidae in sceptra regentium. Ezech., 19, 11.

Dux tibi sit semper talis et iste dui [misengraved for diu]. Mart. L., 12 Eps. [In modern editions of Martial, XII, vi, 6.]

Mace 2.

Tolle virgam et congregapopulum. Num.,20, 8.
Me duce certus eris. Mart. Lib., 1 Ep., 4. [In modern editions, I, ii, 6.]
Virga tua et baculus consolantur me. Psal., 23, 4.

Mace 3.

Portans virgam Dei in manu sua. Exodus, 4, 20.
Virtute duce comite fortuna. [Cicero, ad Fam. X, iii, § 2.]
Annon ipse baculus manus nostrae. Tobi, 5, 25.

The foot-knop is a little raised on a small " rest." It is divided into four quarters, one of which bears the University arms with the motto "Mars musas," which was used on the University seal of 1580. Another quarter bears the crest of George Villiers, Duke of Buckingham—a lion rampant crowned or; a third has a cabled anchor, being the badge of his office as High Admiral; while the fourth bears his coat of arms on a cross five escallops, and his motto, " Fidei colvicula crux," "colvicula" being a mistake for " coticula."

The fourth mace was that of the Yeoman Bedell, an office which has long since been abolished. It differs from the other in that the central part of the staff is of mahogany. This central part is encircled by two silver rings engraved with the motto " Ditior est qui se." There are two other rings on the silver ends of the staffs, so that the whole is divided into seven compartments. The foot-knop is small, and there is no rest. There is no record as to who presented the Yeoman Bedell's mace, but it is ornamented with the arms of the University and those of the Earl of Holland, and there seems little doubt that it was presented by Henry Rich, Earl of Holland, who succeeded the Duke of Buckingham as Chancellor. There seems a certain fatality about presenting maces to the University, for the Duke was assassinated by Felton in 1628, and the Earl was beheaded twenty-one years later.

Let us for a moment return to the flat surfaces at the end of the heads of these maces. They are in all four cases decorated with the royal arms of the Stuart period, and there is evidence that these arms were removed, probably during the time of the Commonwealth and replaced on the return of the monarchy. A reference to the reproductions of these arms shows that while two of them are in good repair, two of them are defaced and worn away. The two that are defaced belong to the two similar maces presented by the Duke of Buckingham. These are the maces most in use, and their state is accounted for by the fact that until comparatively recently the Bedells carried them upside down before the Vice-Chancellor, and only restored them to their proper position when the Chancellor was in residence. They seem to have regarded the Vice-Chancellor as a sort of funeral and marched before him with maces reversed. The constant grounding of the head led almost to the complete effacement of the royal arms; and a similar process of attrition has worn away the rim, and the fleur-de-lis and cross patty are shorn of their outer portions.

The bill for the restoration of the royal arms is still extant.

We now come to the Essex cup, a singularly beautiful piece of plate. Its total height is 17.75 in., and the diameter of the bowl (which is particularly shallow) is 8.25 in. The stem is oviform, with a flat foot; the bowl and the cover are engraved in large checkers, the squares being alternately plain and hatched; the finial and the edges of the cover and base have rich mouldings.

The Devereux arms are stippled on the mouldings and the shield. Quarterly, first, a fess and in chief three roundels for Devereux; second, a cross engrailed between four water bougets for Bourchier; third, France modern and England quarterly within a bordure for Thomas of Woodstock; fourth, an escarbuncle quarterly for Geoffrey de Mandevile, first Earl of Essex. The shield is encircled by the Garter and surmounted by a coronet.

This cup was given to the Vice-Chancellor by Robert Devereux, K.G., second Earl of Essex, the romantic favourite of Queen Elizabeth. He became Chancellor in 1598, and suffered the usual fate of givers of beautiful things to the University, for he was beheaded in February 1601.

In mediaeval times, according to Bentley, the *insignia doctoralia* included a cap and a kiss, a book and a ring, and a chair. Of these the ring alone survives at Cambridge, but it is not used. In fact, there are two gold signet-rings handed on from Vice-Chancellor to Vice-Chancellor; one, a large and heavy ring, bears the arms of the University, while the other and smaller represents Minerva with her helmet, shield, and spear, with a motto, " Si perdam pereo," which was translated to me by an undergraduate: " If I say ' damn ' I perish." But let us hope this is not so! Think of Lord Fisher! On the inner surface is the motto in English, " My only rest."

The canonists regarded the usage of the *insignia doctoralia* as essential to the validity of a doctor's degree, and there was thus little variation during mediaeval times among the different Universities at home and abroad. In Adam Wall's account of the different ceremonies observed in the Senate House, 1798, he writes as follows: " The book delivered by the professor of divinity is the Greek Testament: that delivered by the professor of law is Justinian's Institutes: that delivered by the professor of physics is Hypocrites his Aphorisms." No such books are presented or used at Cambridge at the present day; but at Oxford, when the Vice-Chancellor admits the recipient of a degree, I am told, he touches him on the head with a copy of the New Testament.

" The ring and the book " are still retained at Prague, at Coimbra, and at Madrid. The cap, the ring, and the chair are yet in use in the University of Louvain. The ring is preserved alone at Bologna and Padua, and in the Universities of Sweden the recipient receives a golden ring and puts on a hat—the hat varies according to the Faculty.

As is well known, in the Universities of Scotland the degree is conferred by capping the candidates, which means that as they file before the Principal he touches their heads with a cap. After being capped the newly made M.A. is endued with a hood. The chair is also said to survive at St. Andrews.

The late Public Orator recalled being present at a Congregation when he was a boy of fourteen, and having the satisfaction of seeing the golden ring actually used in the conferring of a doctor's degree. This probably was a revival of the mediaeval custom, due to Professor Selwyn. The Orator recalls how on this occasion the recipient was reluctant to return the ring and that the Senior Esquire Bedell had to prompt him repeatedly before he parted with it.

The kiss was mercifully done away with long before my time, and, perhaps, in view of the increasing demand of ladies for degrees, it is just as well. Still, it is but just to state that Bentley records it was " no kiss of dalliance (*suavium*), but a kiss of holy love (*osculum*)."

Although none of the *insignia doctoralia* regarded by the canonists as essential to the validity of the doctor's degree are now employed at Cambridge, this University has retained a unique vestment which has disappeared from all other seats of learning. This is the cope worn by the Vice-Chancellor and by the Regius Professors of Divinity, Law, and Medicine when they present a candidate for a doctor's degree.

" If the antiquary," says Dr. Rashdall, " wants to see a true mediaeval *cappa*, he must go to Cambridge upon a degree-day. There he will find the presiding Vice-Chancellor and the Professors who present for degrees in the Superior Faculties arrayed in a garment which exactly resembles a fourteenth-century miniature of a Chancellor contained in the precious 'Chancellor's Book' of Oxford. It is a sleeveless scarlet cloak lined with minever, with a tippet and hood of the same material fastened thereto." Its mediaeval counterpart may be seen in the marble monuments of the Doctors of Bologna.

CHAPTER III

CHRIST'S COLLEGE AND THE MASTER'S LODGINGS

LIKE MANY ANOTHER COLLEGE IN Oxford and Cambridge, Christ's arose from a previous foundation. In the year 1442, in the twentieth year of Henry VI's reign, "William Bingham, Rector of St. John Zachary's in London, sensible of the great want of grammarians in England, founded a little hostle . . . to be governed by a proctor, and twenty-five scholars, all to be [not boys learning the rules, but] men studying the criticisms of grammar." William Bingham, in fact, contemplated a post-graduate school, "but the year after, Bingham's small hostle was swallowed up in the King's foundation (not as Ahab's palace ate up Naboth's vineyard, but) by the full and free consent of the aforesaid Bingham, surrendering up to the King for the improving and perfecting thereof."

William Bingham's "little hostle" was situated where the western end of King's Chapel now stands, and the foundation was hardly completed before its site was required by the King for the building of King's College. A new site was therefore selected in what was then termed Preacher Street, opposite St. Andrew's Church, and acquired by the King, and to him Bingham transferred the honour of the founder. The site was outside the city boundaries, close to the Barnwell Gate, and it may be this is the reason why Christ's College has, like other colleges outside the moat which encircled the city, ample grounds and sufficient area for expansion.

Henry VI had an intention to advance the scholars to the number of sixty; but this was never done, and, in fact, God's House seems never to have flourished. The King, indeed, accepted the title of founder while insisting that Bingham and his heirs should be named *fundatores alteri*; but, although he endowed it with numerous benefactions, God's House was always cramped by lack of means. The revenue was never received in full, and, as the late Master in his *History of Christ's College* recalls, " the few documents concerning God's House which I have found in the Muniment Room give the impression of a very poverty stricken foundation."

Nothing is known about the buildings on the new site; but apparently they included a chapel, for a bill still exists, dated 29th March 1510, for setting the old glass in the new chapel of Christ's College. This is probably the oldest glass in any college in Cambridge.

The second foundation of the College is due to Lady Margaret, undoubtedly one of the most remarkable women who have ever lived. Daughter of John, Duke of Somerset, she came of a royal race, descended from John of Gaunt, and was herself the mother of a line of kings. The late Master, Dr. Peile, used to take pleasure in telling us at Commemoration Feasts that she stood exactly half way in direct descent between William the Norman and Queen Victoria. As an heiress her hand was much sought after, and she was married at a very early age by her guardian, the Duke of Suffolk, to his own son, John de la Pole. But the Duke being attainted, this marriage was apparently regarded as a nullity, and the King shortly afterwards bestowed her hand on Edmund ap Tudor, whose mother, Catharine, was widow of Henry V. He had been created Earl of Richmond by Henry VI. Soon after the wedding the Countess of Richmond became a widow, and her only child, Henry VII, was born after the death of her husband. Later she married Henry Stafford, younger son of the first Duke of Buckingham, about whom little is known. He appears to have died in 1482, or at any rate his will was proved in the spring of that year. After a short period Lady Margaret was married, for a fourth time, to Thomas the second Lord Stanley, Earl of Derby.

Without any question, Lady Margaret was far in advance of her time. Fisher, her spiritual adviser and constant friend, describes her as one

" of singular wisdom far passing the common rate of women." " She was good in remembrance and of holding memory; a ready wit she had also to hold all things, albeit they were right dark. Right studious she was in books, which she had in great number both in English and in French." " She was bounteous and liberal to every person of her knowledge and acquaintance. Avarice and covetice she most hated, and sorrowed it full much in all persons, but specially in any that belonged to her." Such was the second founder of Christ's College, for " Lady Margaret, Countess of Richmond and Derby [accounting herself as of the Lancastrian line heir to all King Henry's godly intentions] altered the name from God's House to Christ's College, and made up the number, viz., one Master, twelve Fellows, forty-seven Scholars, in all sixty." Still, the technical inscription of the body recognized Henry VI as the Founder. It is as follows:

" The Master or Keeper, Fellows and Scholars of Christ's College in the University of Cambridge, by Henry VI, King of England, first began, and after his decease augmented, finished and established by Margaret Countess of Richmond and Derby, Mother to Henry the Seventh." Great and good were the lands which this lady in her last will bestowed on this College in several counties.

The site upon which Lady Margaret built her college coincides with the present first court, and had been all, or nearly all, the property of God's House. The court is, as J. W. Clark describes it, " an irregular trapezium placed in such a direction that the meridian line coincides very nearly with one of the diagonals." Geographically speaking, the " north " side is really north-west, and the east end of the chapel points to the north-east; but for convenience of description we shall assume that the chapel really lies east and west. An innovation in college buildings, and a good one, was that two of the sides, the north and the east, project beyond the outside of the quadrangle: the chapel projects beyond the eastern side of the court eastwards, and the kitchens southwards beyond the southern side. By this arrangement the chapel and the lodge, the hall, the buttery, and the kitchens occupied the eastern side facing the Great Gateway opening on to St. Andrew's Street. The other three sides of the court are given over to the Library, the Muniment Room, and students' chambers. The Master's Lodge lies between the chapel and the hall, and it is with this lodge that the present article mainly deals.

The King's licence for the refoundation of " God's House," or Christ's College, is dated 1st May 1505, and the papal bull, now in the Public

Record Office, confirming the foundation, given by Julius II, the Della Rovere Pope, is dated 25th February 1509. It appears that the building was begun without loss of time, and the visit of Henry VII to Cambridge the same year is believed to have been due to a desire to grace with his presence his mother's foundation, now newly laid.

The College, as Lady Margaret knew it, consisted of the first court only, but even so, as Dr. Peile recalls, it was undoubtedly the largest college existing at that time. It is difficult for us to realize a Cambridge in which Trinity College, King's College, and St. John's College were yet wanting. King's consisted then of the old court—now part of the University Library—and the partially built chapel; St. John's was still an ancient hospital, and Trinity an unconsolidated collection of small hostels.

Lady Margaret's new foundation was built of clunch, a very hard form of chalk, interspersed with red brick. Walls of these building materials can still be seen on the northern and southern outer sides of the first court. But clunch, although fairly durable, soon becomes untidy, and it was found necessary first to whiten and then to re-face with ashlar the interior of the court. The east side of the first court, then the only court existing, was divided equally between the Hall and the Lodge, and in Lady Margaret's time, it would seem that the latter had no out-buildings. The Lodge is believed to be the only one built by royalty for royalty, for Lady Margaret reserved for her own use the first floor rooms; but in her absence from Cambridge, Bishop Fisher, her confessor, was allowed to occupy them. The Master had to content himself with the rooms on the ground floor.

Although in the course of four centuries there have been certain rearrangements of the interior of the Lodge, its main features seem to have been more or less maintained. On the ground floor next to the College hall there was a large room which was till lately the dining-room. Until 1911 this room was separated from the northern wall of the College hall by a passage which led, on the eastern side, to the original spiral stone staircase leading to the first and second floors. This passage has now been thrown into the room and the whole is used as the present Master's study. The central space on the ground floor, comprising three small halls and the late Master's study, has now been rearranged as an entrance hall, with the front door in the centre, and a dining-room. Beyond this, and between it and the chapel, was a third chamber, which is now taken up by a comparatively modern Jacobean staircase and a lobby leading to the servants' quarters. The last named were entirely rebuilt in 1911.

The south-west corner of the present Master's study has a door concealed in panelling which leads under a Tudor arch on to the dais of the hall, now one of the most beautiful in Cambridge. In the old days the hall had good oak panelling of the so-called linen-fold pattern and a very high roof. Unfortunately, in 1723 money was given to " beautify " it, and this was done by placing deal wainscoting over the oak panelling, by destroying the old fireplace, and by hiding the pointed roof with a cylindrical plaster ceiling. A hundred and fifty-two years later the hall was found to be in such a condition that rebuilding was decided upon, and this was done under the superintendence of Mr. George Gilbert Scott. The old roof was opened up, a second oriel window was built on the eastern side, and a gallery was reconstructed over the "screens." In 1882 an exceedingly beautiful window, containing portraits of the founders and the benefactors and worthies of the College, was placed in the western oriel; they range from Henry VI to Charles Darwin, and include, among others, John Fisher, Lady Margaret and Edward VI, Sir John Finch and Sir Thomas Baines; Leland, the King's antiquary; Sir Walter Mildmay, chancellor of Queen Elizabeth; Francis Quarles, John

Milton, John Cleveland, Ralph Cudworth, and William Paley. A few years ago the walls of the hall were redecorated by the late Mr. Bodley, R.A., who was also responsible for the reconstruction and decoration of the College library and chapel.

The rooms on the first floor of the Lodge seem to have been originally three, though they have now been divided up into five. The room over the dining-room and entrance-hall is the present drawing-room; between that and the dining-Hall there is a spacious bedroom, with dressing-room and bathroom annexed, and from this dressing-room two little windows—one of them in a powder closet—look into the hall, so that the Foundress or the Master could control the scholars who spent most of the day there. On the northern side of the first floor was an oratory panelled with oak, with a beautiful oaken ceiling, and here we find a feature unique in Cambridge, and occurring, I believe, at Oxford also only once—a window, or hagioscope, looking into the chapel. To the west of the oratory was a small chamber, probably Lady Margaret's sleeping room; the space it occupied is now taken up by a staircase, which is comparatively modern.

At the time of Dr. Peile's election to the Mastership in 1887 some restorations to the drawing-room disclosed the existence behind an iron grate of a magnificently carved clunch fireplace, ornamented with a series of badges, which are set forth below. They were originally sixteen in number, without counting the foliage in the angles; but, when the fireplace was opened out, it was found that the two lowest on the left hand, as the spectator faces the fireplace, had been wholly destroyed. The remaining fourteen as described by the late Registrary, counting from left to right, are as follows:

"1. A full-blown rose, with two rows of five petals.

"2. A fleur-de-lys, surrounded by daisies, some full-blown, some in bud.

"3. The letters H. R.[1] knotted together by a piece of cord.

"4. Three feathers, one drooping sinister, two drooping dexter, set in an escroll, bearing the words *Dieu et*.

"5. A portcullis.

"6. A full-blown rose, as in 1.

"7. The letters H. R., as in 3.

"8. A portcullis.

"9. A fleur-de-lys, set on a background of foliage.

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[1] The monogram is, in all its repetitions, defaced. The R. may be a K. R.K. in a true lovers' knot is very common in Windsor Castle.

"10. An arched crown, surmounted by a cross, and backed by foliage.

"11. A group of daisies and leaves, growing out of what appears to be intended to represent a flowerpot.

"12. A full-blown rose, as in 1 and 6.

"13. Three feathers, as in 4. The scroll bears the words *Dieu et mo*.

"14. A basket, or flowerpot, out of which daisies are growing."[1]

When the present Master was elected, the Lodge needed much restoration, and it became necessary to take down every partition and every floor and to rebuild the entire interior. Only the greater beams were left, and these had, in many cases, to be restored. The result was that for some months one could stand on the earth on the ground floor and look through a maze of beams to the ridge pole of the roof, the whole resembling a gigantic cat's cradle in a mammoth cigar box. The beams had to be "jacked up" and fastened to steel girders running from wall to wall, but even now they sag a little. The wonder really was that the floors were ever held up at all, for the more the beams sagged the more the eighteenth and nineteenth century Masters hacked them flat with an adze, and the more they hacked the more the beams sagged. In many cases the new reſtoration of the old mouldings extends over nine-tenths of the length of the beam. Between the beams, and running from north to south, is a series of beautifully moulded joiſts, with a little leaf carved at each of their four lower angles. These had been treated in a similarly iconoclaſtic way, except those in the above-mentioned passage leading to the spiral ſtaircase; consequently it became necessary to replace some forty of these joiſts in the present ſtudy alone. The joiſts were covered in by a plaſtered ceiling. When the plaſter was removed curious discoveries were made; to those I will return later.

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[1] J. W. Clark, *Cambridge Antiquarian Society*, *Communications*, 1888, vol. vi, p. 373.

Undoubtedly the upper floor was the more magnificent, for when we came to remove the iron fireplace in the sleeping chamber between the drawing-room and the College hall an even more splendid fireplace, 7 ft. 7 in. wide, was discovered behind it. This has been carefully removed, and set up in the present ſtudy on the ground floor. It was decorated with the same badges as the one in the drawing-room, with the addition of the Insignia of the Garter, moſt minutely carved in clunch.

The ceilings of the firſt floor are either panelled in oak or the space between the beams divided up into squares or lozenges by small oak mouldings.

These had all to be taken down, but were carefully numbered and replaced, and in the drawing-room the space between them has been decorated with gilded and coloured plaster designs connected with Lady Margaret and her son. The oak ceiling of the oratory, or prayer room, had been covered with a yellow paint. This paint was removed; but that on the walls, which represents panels, each with a star in its centre—which gave to the room its old name of the "Star Chamber"—has been preserved.

An outlying portion of the Lodge, probably dating long after the foundation of the College, consists now of two bedrooms and a bathroom over the ante-chapel. The space they occupied, it is thought, was at one time a private oratory for the Master, though how he got into it does not seem to be very clear. Still, there were traces of windows looking into the west end of the chapel, and there is a certain amount of traditional evidence that it was used as a prayer-room. In Covell's time (1688-1723) this chamber was approached by an overhanging gallery which ran from a window in Lady Margaret's small bedchamber to a window over the ante-chapel, both of them at that time probably doors. More recently this was removed, and by cutting a narrow passage through the thickness of the walls communication was established to the chambers above the ante-chapel. The walls in this case were some five feet thick. From the north-west corner of these bedrooms a small spiral stone staircase leads down into the chapel. When the old servants' quarters, which clung round half of the chapel, were removed an archway leading into the east end of the chapel was disclosed. Whether this was intended to lead into a tomb which was never constructed, or whether it was, as Sir Thomas G. Jackson has suggested, merely a temporary opening for the use of the workmen, remains undetermined.

The second, or topmost, floor of the Lodge, under the roof, which is supported by moulded beams, was at one time apparently open from end to end, forming a kind of gallery. It is now divided into bedrooms, bathrooms, etc. At its north end, over the Foundress's oratory, is a small bedroom decorated in the Jacobean style. From this a modern staircase leads to the first floor.

WE now turn to the interesting discoveries that were made in the reconstruction of the Lodge in 1911. There was no doubt that on its completion Christ's College must have been a stately and beautiful dwelling, though small and compact. Probably the Lodge was, as Dr. Peile records in his history of the College, like the Chapel. He states: "The Chapel must have been much more beautiful during the first fifty years of the College than at any later time." Possibly the Puritans did something to disfigure the Master's Lodge. They certainly did so to the Chapel, for the diary of the unspeakable William Dowsing, dated 2nd January 1643, records: "We pulld downe divers Pictures and Angells, and the Steps D. Bambridge hath promised to take them downe" but it seems more likely that the beauty of the Tudor building was gradually destroyed by a succession of inartistic and utilitarian Masters during the eighteenth and the beginning of the nineteenth centuries. Our ancestors had a difficulty in keeping their chambers warm, and this may account for the fact that in nearly all the rooms in the first court that have been restored the old open hearth with a four-centred arch has been found behind a modern iron fireplace of the cheapest and commonest kind. The comparatively modern invention of central heating has rendered it possible to revive the old open hearths, though it must be confessed that most of their heat goes up the chimney. Among the more remarkable discoveries at the time of the restoration in 1911 was the chimneypiece that has already been described, found in one of Lady Margaret's chambers, which has been re-erected in the Master's study. A much plainer, but picturesque fireplace was reopened in the present dining-room, which, it will be remembered, was the late Master's study.

Perhaps the most interesting of all the discoveries was made on the roof of the ground floor. It has been mentioned before that the joists of the ground floor ceiling were for the most part covered in by comparatively modern plaster ceilings through which, however, the bigger beams projected. These plaster ceilings were removed, as was nearly everything else in this crumbling building, and on the afternoon of 23rd May 1911, the foreman sent to tell me that they had found that the beams and joists under the plaster ceiling, especially those in the present hall and dining-room, were covered with a paper bearing a black and white design on the exposed and lower side, while on the upper surface, next to the joists, there appeared to be some early printing. I at once sent for an expert from the University Library. Unfortunately, he could not come until six o'clock, and when we visited the Lodge at that hour we were dismayed to find all traces of the paper, or nearly all, had been cleared away. This seemed to be a terrible disaster. We thought that the workmen had simply brushed the fragments off; but I had underestimated the ability of the British workman and, above all, of the able firm of builders—Messrs. Rattee and Kett—who were carrying out the restoration under the instructions of Mr. G. C. Hare. On coming down to the Lodge next morning I found that every fragment of paper had been most carefully removed and preserved. Later it appeared that not only the joists in the dining-room and the entrance hall, but those in the present Master's study, were also covered with similar scraps of paper. The pattern is of a well-known Oriental, pineapple type, probably Persian in origin, printed apparently from a wood block, and it is worth noting that what we found was to a great extent a stencil. Wherever the black ink covered it the paper had been preserved, probably by some antiseptic quality in the oil of the printing ink; but the white interstices had yielded to the bacteria which destroy all paper—and very fortunate it is for us that bacteria do destroy paper, otherwise it would be hardly possible to move about the world in the present century. As I have said before, we only found fragments, but we have found many repeated examples of these fragments, and by working on the principles of a jig-saw puzzle the late Mr. Edwin Wilson was able to retrieve the pattern. The design was apparently printed from a single wood block, 16 in. by 11 in., and consisted of a conventional pine cone centre surrounded by strapwork and flourishes. It is noticeable that half-way up, or a little more than half-way, the pattern has on the left a Tudor "𝕳" and on the right a little bird. These were obviously an indication of either the artist or the printer. We must now state that on the other side of the pattern, which was in direct contact with the joists, was the first proclamation of Henry VIII to his people. Of this no printed copy, I believe, had hitherto been known, although it exists in manuscript in the Public Records Office. The proclamation begins as follows:

1 " The Kyng our souu[erain L]ord H[enry 1
by the grace of God King of England] and
of France / and [Lord of Ireland of this]
2 Name the . VIII [doeth you] t[o] und[re] 2
stan[d that for as moche as the King hi]s
Fadre of moost noble [memorie] whose
sowle
3 god ꝑdone of his [blessed dis]posicion 3
And for the suertie and comfute of his
louyng subgictis in his lyftyme gaue & graū
4 ted. to alle & euery of th[eym] A generall 4
ꝑdoñ of Misprisōns felonyes trespases
forfaytures outlawries certein recogni
5 sanc' & many other offensys d[oon and 5
comytted] before ye . x. day of Aprillē last
passed as more [p]laynly appereth by y^{e}
same . . ."

On consulting various experts, who are always at hand in a place like Cambridge, it seemed clear that the proclamation had been printed by one Hugo Goes, originally of Beverley, and indeed there is a description of a woodcut by him in this Yorkshire town with the statement:

"Emprinted at Beverley in the Hye-gate by me Hewe Goes with his mark or rebus of a great 𝔥 and a goose."

Goes was on 18th February 1509 printing at Steengate, York. Why Goes should be employed to print the King's proclamation is not perhaps clear, but, as Mr. Charles Sayle has pointed out, Lady Margaret's confessor, Bishop Fisher, was born in Beverley, and in those times fellow-townsmen were apt to cling closely together.

Of the fifty-four lines of the King's proclamation all but two were recovered, though certain letters and even words were missing. It is possible to believe that this is the first example of a paper being used for a decorative purpose, for, as is well known, wallpapers only began to be used commonly about the time of Queen Anne. But not all the fragments bore the royal proclamation. Some recorded a proclamation of pardon for all crimes committed before 23rd April 1509. Others bore a poem on the death of Henry VII, of which five and a half seven-line stanzas were partially retrieved. One of these, according to Professor Skeat, included the earliest known example in English literature of the use of the word "pang." It seems possible that this poem was printed by Caxton, as the fragments contained a Caxton "I," which was only used by him and his immediate successor, Wynkyn de Worde. Other fragments bore an Indulgence with the Della Rovere arms at the top. All these fragments have been carefully preserved between plates of glass, and are now deposited in the College library.

But the chimneypieces and the joists and the pattern with its varied literature on the back do not exhaust the curious discoveries which were made when the interior of the Lodge was re-erected. Under the floor of the drawing-room were discovered four mummified bodies of the old English black rat (*Mus rattus*). Possibly they died of plague, for plague was about in those times; but whatever they died of, they died like scholars, for, after the manner of rats, they had collected together a miscellaneous collection of rubbish to form the nest in which they succumbed, and the rubbish was all scholarly. Among other trifles were two leaves of the long duodecimo primer in Wynkyn de Worde's type. Of this only three editions are known, all represented by single copies. There was also a fragment in Caxton's type, No. 5, of the *Donatus Melior* of Mancinellus, printed at

Milan in 1499, and pages of an unknown edition of Virgil; but perhaps the rats showed their literary taste as much in four whole octavo leaves of a Horace, which, again, seems to have been of an unknown edition. Another minute scrap bore the heraldic initial " T," which was used by Pynson in *The Destruction of Jerusalem*.

Further, there were manuscripts. The oldest, dated 29th November 1327, is a Charter of Confirmation on vellum, from a person unknown, to John, the son of Richard de Redham de Quarflet apud Brad[ ] and to Thomas [ ] and his heirs. The second is an agreement, on paper, between Thomas Thompson yeoman of London and Thomas Thompson Master of Christ's College and the Fellows of the Society as to a certain number of marcs, dated 1520. On the verso the yeoman is described as " fermor of the prebend callid the More belonging to the Cathedral Chirche of Saynt Polle of London," and is " for certeyn londes belonging to "— and there the writing stops, unfinished. A third manuscript is a poorly written appeal to " your Mastership," and refers to the " Macypyll." The writing, which is that of an illiterate petitioner, has been deciphered and transcribed by Mr. Alfred Rogers of the University Library. The date is probably about 1520-1530.

There were also four playing cards of a small size made of thickish paper. Unfortunately, there were no court cards among them; but I have seen cards of a similar kind at the Record Office, which date from 1518, so that it is quite possible that Lady Margaret and Bishop Fisher played piquet or écarté with them. Finally, there were fragments of a much later date, verses extracted from *The Cowslip*, by Mrs. Elizabeth Turner, which was first published in 1811. Two of these are reproduced.

" FILIAL LOVE

Miss Jane's mamma was very ill,
And felt such pain she could not sleep,
And Jane would quietly sit still
Or sometimes through the curtains peep.

THE PURLOINER

As Joe was at play,
Near the cupboard one day,
When he thought no one by but himself,
How sorry I am
He ate raspberry jam,
And currants that stood on the shelf."

Another interesting find in what was originally the north-east end of the Lodge, on the ground floor, was an ancient window of typical Tudor type which had been bricked up and concealed for an indefinite number of years. This is one of the very few old windows left in the Court, though two or three similar windows have recently been exposed on the outer wall of the southern side of the College.

Shortly after the foundation of the College, in the year 1507, probably before the buildings were completed, the Master of Christ's, Richard Wyot, obtained a lease for ninety-nine years at a rent of *6s. 8d.* yearly, of a " certeyn parcell of Grounde lying in the bakeside of the said Collegge called Cristes Collegge," from Jesus College. This was subsequently purchased in September 1554, when it was spoken of as " le grett orchard." It forms now part of the College garden.

The garden is remarkable for having in it a most picturesque and delightful swimming bath surrounded by trees and adorned by busts. The running water which supplies it is said to have been given by Hobson of " Hobson's choice." The " grett orchard " is further much visited on account of a very fine mulberry tree which is supposed to have been planted by John Milton. My knowledge of the undergraduate, and it is a long one, leads to the belief that he is rather more apt to pull up trees than to plant them, and the following is, perhaps, a better explanation of the origin of the tree:

At the end of the sixteenth century a carpenter was employed to mend " the frame of the vine in the Fellowes' garden "; and at the beginning of the next century an event took place which probably throws some light on the origin of Milton's mulberry tree. In the year 1608 King James I was interested in promoting the cultivation of mulberries, and a letter was addressed by him " to the Lords Lieutenant of the several Shires of England urging them " to persuade and require such as are of ability to buy and distribute in that County the number of ten thousand mulberry plants which shall be delivered to them at our City of etc., at the rate of 3 farthings the plant, or at 6*s*. the hundred containing five score plants."

In furtherance of this command a French gentleman, M. François de Verton, was appointed to distribute the plants. He travelled over a great part of the North of England, the Midlands, and the Eastern Counties, and, among other places, came to Cambridge. Here it appears he was not received with any great amount of enthusiasm, for only three colleges—Jesus, Christ's, and Emmanuel—took any of his plants. The transaction is mentioned in the College accounts as follows: " Item for 300 mulberrye plants, xviii.s." This was in 1608-9, the date of Milton's birth. Milton was admitted to the College sixteen years later.

Whether Dr. Johnson's grandiloquent statement "that Milton was one of the last students in either University that suffered the public indignity of corporal correction" be true or not, there is no doubt that his relations with his tutor, Mr. Chappell, were such that he withdrew from the College for some time under "circumstances equivalent to rustication" (Masson's *Life of Milton*); and it seems hardly probable that a student who was apparently not popular with the authorities should be allowed to plant mulberries in the Fellows' Garden. The tree is probably the last of the three hundred which cost the College 18*s*. in 1609. In connection with this it is worth while mentioning that another mulberry tree, standing near the Vicarage at Stowmarket, is said by tradition to have been planted by Milton. The legend is recorded by Masson, who adds: "No fact in universal biography is better attested than that great men, wherever they go, plant mulberry trees!"

The garden is undoubtedly one of the most beautiful in Cambridge:

"Here Milton mused; here Darwin's brow unbent
Here strolled the singer of a later day
Who taught to English ears the ravishment
Of sweet Theocritus' undying lay."

CHAPTER IV

THE HUNTING OF THE YALE

ZOOLOGICALLY SPEAKING, THE elder Pliny is undoubtedly the "author" of the yale.[1] He firſt described the animal in such a manner that it could be recognized—as a yale—by any intelligent person who came across one. Pliny describes the animal as bred among the Ethiopians:

"Apud eosdem et quae vocatur *eale*, magnitudine equi fluviatilis, cauda elephanti, colore nigra vel fulva, maxillis apri, maiora cubitalibus cornua habens mobilia quae alterna in pugna ſiſtuntur eaque infeſta aut obliqua, utcumque ratio monſtravit."—*Nat. Hiſt.*, viii, 21.

Pliny wrote *Natural Hiſtory*, as Dumas *père* wrote novels, with the aid of an unrestricted imagination and an unlimited supply of secretaries, understudies, or "ghosts." Pliny was in the habit of having books read to him—probably in the bath—and later in the day he dictated to his crowd of scribes what he remembered and digested. In spite of his uncritical mind and uncritical methods, and in spite of his unbridled fancy, he can hardly have invented the yale. He may have derived the animal from some lost writer on natural history, such as Antipater of Tarsus; but, at any rate, he serves as a fixed point from which we may start our yale-hunt, both backward into antiquity and forward into the Christian era.

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[1] The name of the animal is probably connected with the Hebrew *'ayyāl*, which, I understand, is translated by the word "hart" in the Bible, and is doubtless connected with the Arabic *'iyyal*, or even more probably, as a learned friend tells me, with *yā-'ēl*, the Hebrew for wild goat. Mr. Thomas of the University Library tells me that the form *eale* in Pliny may represent a classical spelling *aeale*. The suffix seems to show that it came from a Greek form which would be *αἰαλη*. The final "*η*" in Greek generally comes from an earlier *ā*, and the earlier form of the word would be *αἰαλᾱ*. This would be an exact transliteration of the record which occurs in Syriac, and in the Aramaic of the Talmud. This would seem to show that the word came to Pliny, or his Greek authority, from a district where Syriac was spoken, *i.e.*, Asia Minor rather than Egypt.

The scant references to yales in pre-Plinian times begin with Aristotle, who, in discussing the proboscis of the elephant, remarks:

> Ἐπεὶ δ' ἀδύνατον ἦν εἶναι τὸν μυκτῆρα τοιοῦτον μὴ μαλακὸν ὄντα μηδὲ κάμπτεσθαι δυνάμενον (ἐνεπόδιζε γὰρ ἂν τῷ μήκει πρὸς τὸ λαβεῖν τὴν θύραθεν τροφήν, καθάπερ φασὶ τὰ κέρατα τοῖς ὀπισθονόμοις βουσίν· καὶ γὰρ ἐκείνους νέμεσθαί φασιν ὑποχωροῦντας πάλιν πυγηδόν. (*De Partibus Animalium*, ii, 16, 16.)

Dr. William Ogle, who kindly drew my attention to this passage, has translated it thus:

"Now it would have been impossible for this nostril to have the form of a proboscis, had it been hard and incapable of bending. For its very length would then have prevented the animal from supplying itself with food, *being as great an impediment as the horns of certain oxen, that are said to be obliged to walk backwards while they are grazing.*" (The italics are mine, not Aristotle's.)

To the hunter of yales the last two lines are significant. What were these oxen whose horns projected in front of the head so as to impede their forward progress while grazing? Here, again, Dr. Ogle helped me with a reference to Herodotus. This traveller tells us that ten days from Augila (the name of this town appears in *The Times* map of the seat of the Turkish-Italian War under the name of Aujila), lying north of the Libyan Desert, close to the south-eastern border of the Vilayet of Tripoli, is a region:

καὶ ἄνθρωποι οἰκέουσι ἐν αὐτῷ τοῖσι οὔνομα Γαράμαντές ἐστι, ἔθνος μέγα ἰσχυρῶς, οἳ ἐπὶ τὸν ἅλα γῆν ἐπιφορέοντες οὕτω σπείρουσι. συντομώτατον δ' ἐστὶ ἐς τοὺς Λωτοφάγους, ἐκ τῶν τριήκοντα ἡμερέων ἐς αὐτοὺς ὁδός ἐστι· ἐν τοῖσι καὶ οἱ ὀπισθονόμοι βόες γίνονται. ὀπισθονόμοι δὲ διὰ τόδε εἰσι. τὰ κέρεα ἔχουσι κεκυφότα ἐς τὸ ἔμπροσθε· διὰ τοῦτο ὀπίσω ἀναχωρέοντες νέμονται· ἐς γὰρ τὸ ἔμπροσθε οὐκ οἷοί τε εἰσὶ προεμβαλλόντων ἐς τὴν γῆν τῶν κερέων. (From Stein's edition of *Herodotus*, Book IV, 183, Berlin, 1877.)

This is translated by Rawlinson as follows:

"This region is inhabited by a nation called the Garamantians, a very powerful people, who cover the salt with mould, and then sow their crops. From thence is the shortest road to the Lotophagi, a journey of thirty days. In the Garamantian country are found the oxen which, as they graze, walk backwards. This they do because their horns curve outwards in front of their heads, so that it is not possible for them when grazing to move forwards, since in that case their horns would become fixed in the ground."[1]

Rawlinson appends the following footnote:

"No oxen of this kind have been observed by modern travellers, though the same account is given by many of the ancients.[2] Heeren conjectures that the horns were *made* to grow in this way. The neatherds of Africa, he says, frequently amuse themselves in giving an artificial form to the horns of their cattle, by continually bending them.[3] But it is difficult to assign a motive for their giving them so inconvenient a shape."

The country of the Garamantians is identified by many authorities with the modern Feyzan where is found a ruined city, Germa (Garama), the ancient capital.

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[1] From Rawlinson's translation of *Herodotus*, London, 1862, vol. iii, pp. 132 and 133.

[2] Alex. Mynd., ap. Athen., V, 20, p. 221, E.; Plin., *Nat. Hist.*, viii, 45; Mela, i, 8.

[3] *Af. Nat.*, I, p. 222, E. T.

The statement in Rawlinson's note just quoted, to the effect that " no oxen of this kind have been observed by modern travellers," is no longer correct. During the correspondence about the yale which took place in the columns of *The Times* in the early part of the summer of 1911, Dr. C. G. Seligmann drew my attention to the existence of

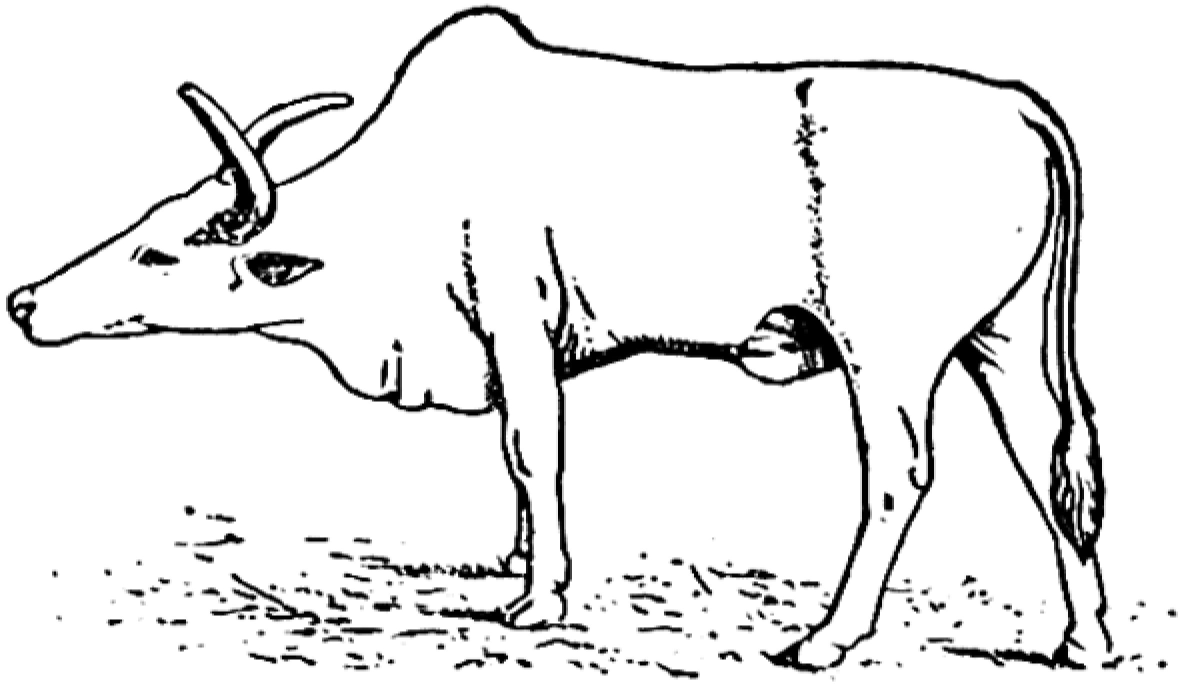

FIG. I. *BOS BUBALIS*, WITH TRAINED HORNS

domesticated cattle, with horns running " fore and aft," amongst the powerful tribe of Dinkas who occupy a great territory in the Bahr-el-Ghazal, to the south of the White Nile. Their cattle are artificially mutilated, and their horns are " trained forward and backward." Dr. Seligmann kindly gave me a photograph of one of these oxen, an outline of which is given in fig. 1. All the Dinka cattle, which belong to the African variety of *Bos indicus*, are not treated in this way, only the leader of the herd, who is always a bull. This leader is called a "majok," and there is never more than one majok in each herd at one time. Rarely cows act as leaders, and, though they may be highly trained, the term "majok" is never applied to them. The herdsmen have a deep affection for their majoks, and it is a compliment to the Dinka young men to apply the term "majok" to them. It seems to be applied much as we used to use the term "buck." The two horns of the "majok" are by the Dinkas artificially trained to point one forward and the other backward. This is done by slicing away the anterior base of the young and growing horn which is to project forwards, and the posterior part of the base of the other horn. Probably a certain amount of pressure is also brought to bear.

Mr. Leonard Huxley has drawn my attention to a passage in Wood's *Natural History*, London, 1868, in which are fully described the habits of the Kaffirs (who, of course, live at the opposite end of Africa from the Dinkas) in mutilating their cattle: "But, in some parts of the country, he lavishes his powers on the horns. Among us the horn does not seem capable of much modification, but a Kaffir, skilful in his art, can never be content to leave the horns as they are. He will cause one horn to project forward and the other backward, and he will train one to grow upright and the other pointing to the ground. Sometimes he observes a kind of symmetry and has both horns bent with their points nearly touching the shoulders, or trains them so that their tips meet above, and they form an arch over the head. Now and then an ox is seen in which a most singular effect has been produced. As the horns of the young ox sprout they are trained over the forehead until the points meet. They are then manipulated so as to make them coalesce, and so shoot upwards from the middle of the forehead, like the horn of the fabled unicorn. Le Vaillant mentions this curious mode of decorating the cattle, and carefully describes the process by which it is performed. 'I have not yet taken a near view of the horned cattle which they brought with them because at break of day they strayed to the thickets and pastures and were not brought back by their keepers until the evening. One day, however, having repaired to their kraal very early, I was much surprised when I first beheld one of these animals. I scarcely knew them to be oxen and cows, not only on the account of being much smaller than ours, since I observed in them the same form and the same fundamental character, in which I could not be deceived, but on account of the multiplicity of their horns and the variety of their different twistings. They had a great resemblance to those marine productions known by naturalists under the name of stags' horns. Being at this time persuaded that these concretions, of which I had no idea, were a peculiar present of nature, I considered the Kaffir oxen as a variety of the species, but I was undeceived by my guide, who informed me that this singularity was only the effect of their invention and taste; and that, by means of a process with which they were well acquainted, they could not only multiply these horns, but also give them any form that their imaginations might suggest. Having offered to exhibit their skill in my presence, if I had any desire of learning their method, it appeared to me to be so new and uncommon, that I was willing to secure an opportunity, and for several days I attended a regular course of lessons on the subject. They take the animal at as tender an age as possible, and when the horns begin to appear they make a small vertical incision in them with a saw, or any other instrument that may be substituted for it, and divide them into two parts. This division makes the horns, yet tender, separate of themselves, so that in time the animal has four very distinct ones. If they wish to have six, or even more, similar notches made with the saw produce as many as may be required, but if they are desirous of forcing one of these divisions in the whole horn to form, for example, a complete circle, they cut away from the point, *which must not be hurt*, a small part of its thickness, and this amputation, often renewed and with much patience, makes the horn bend in a contrary direction, and, the point meeting the root, it exhibits the appearance of a perfect circle. As it is certain that incision always causes a greater or less degree of bending, it may be readily conceived that every variation that caprice can imagine may be produced by this simple method. In short, one must be born a Kaffir and have his taste and patience to submit to that minute care and unwearied attention required for this operation, which in Kaffir-Land can only be useless, but in other climates would be hurtful. For the horn, once disfigured, would become weak, whereas when preserved strong and entire it keeps at a distance the famished bears and wolves of Europe.' The reader must remember that the words refer to France, and that the date of Le Vaillant's travels was 1780-1785." Further, Le Vaillant is not always to be trusted. This very elaborate treatment of the horns practised by the Kaffirs of South Africa, as described above, is in advance of anything I have been able to find among the Dinkas. There apparently they only train the horns fore and aft.

Dr. Seligmann also drew my attention to certain figures of cattle with horns directed bending forward and backward, which occur in Egyptian paintings, and with the assistance of Mr. F. W. Green of Jesus College, without whose aid in this matter I could have done nothing, I have examined a series of heads which show that this method of treating the horns of cattle is of great antiquity.

One figure represents the heads of three oxen in which the horns apparently, and I think really, are twisted different ways.[1] It is Meroitic, from Bakawaria or Kabushia in the Soudan, and probably dates from the Græco-Roman period, 100 B.C. to A.D. 200.

Another illustration is taken from a photograph on the walls of the Temple at Luxor (fig. 2). It is incomplete, and in some ways inexplicable. There is the outline of a human head, with a somewhat elaborate head-dress, emerging between the base of the two horns. The extremity of the left horn ends in what seems to be a hand; that of the right has been cut away. It may, of course, be argued that these processes represent arms only, and not horns; but the absence of any indication of shoulder, elbow, and wrist, and, above all, the relative proportions of these parts to the human head and to the ox's head, encourage me in the belief that the artiſt meant them to represent horns, and for some myſterious purpose let them end in hands, or perhaps in gloves. It is possible that these animals are merely fantaſtically decorated animal tribute brought to the King of Egypt as offerings to the god Amon. No one who has ſtudied Egyptian drawings can fail to be impressed by the sense of proportion and of the value of relative size that the artiſts of those times showed.

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[1] Lepsius, *Denkm. aus Egypt. u. Æthiop.*, Band X, Abtheilung V, Blatt 29.

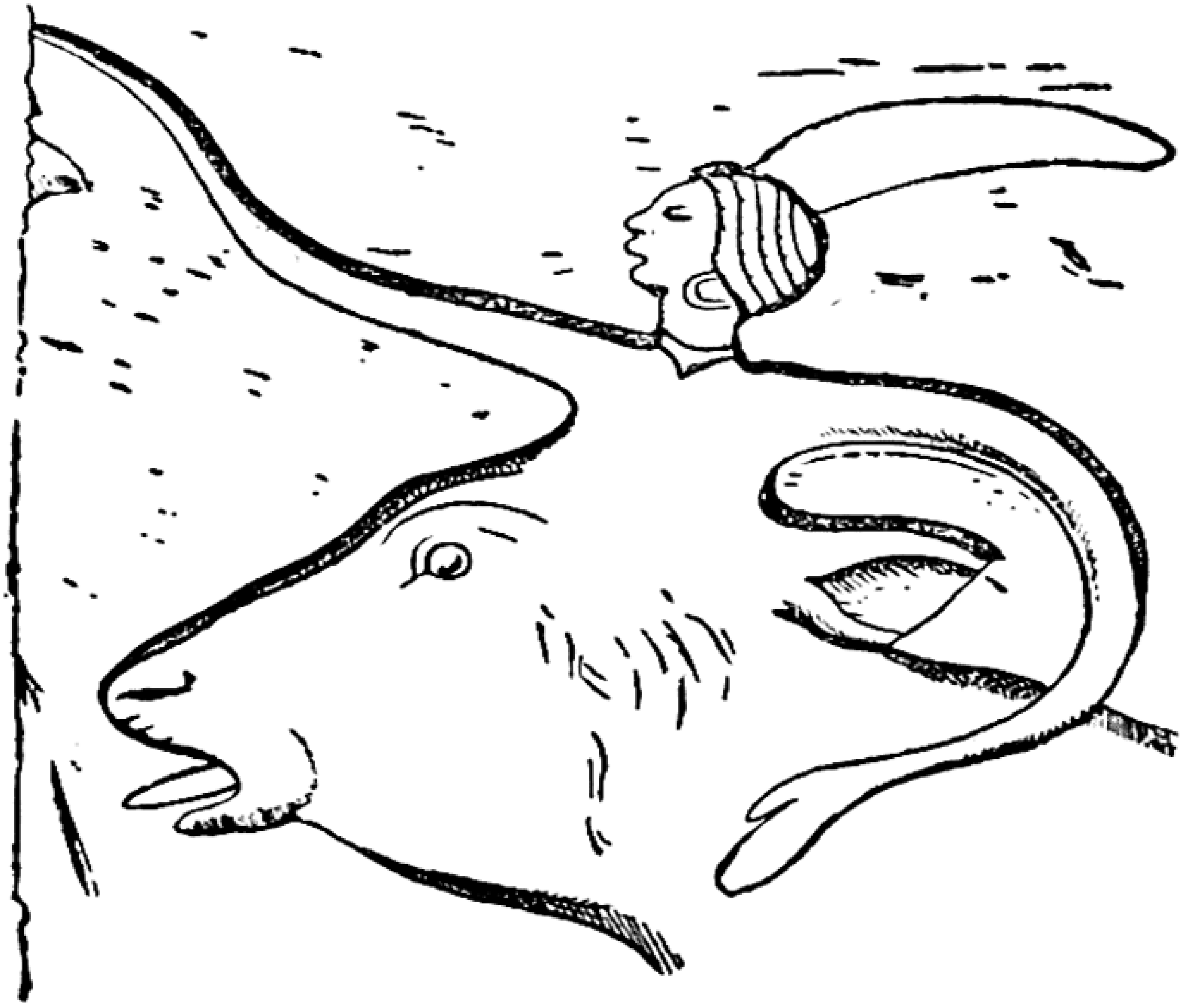

FIG. 2. PAINTING IN THE TEMPLE AT LUXOR, 1300-1234 B.C.
This has a fantastic negro's head, like a mascot on the front of a motor-car

It is not without significance that this ox just mentioned is being led by a company of Ethiopians, among whom, according to Pliny, the yale is bred. Mr. F. W. Green tells me the " hands " are probably gloves, and that he knows of another instance where the tips of horns were en-

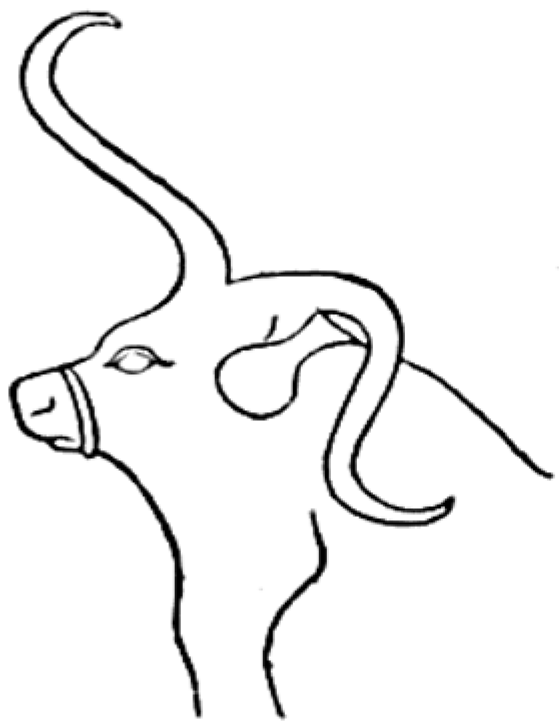

FIG. 3. PAINTING IN THE TEMPLE OF RAMESES II, 1300-1234 B.C.

sheathed in gloves. The date of this drawing is the New Kingdom, Rameses II Nineteenth Dynasty, roughly 1292-1225 B.C. Fig. 3 shows another head taken from the Temple of Rameses II, and of the same date as the preceding.

I attach very special importance to fig. 4. This shows the heads of two oxen, but though the whole herd is not included in my reproduction, these two oxen were walking at the head of a company of many beasts. It will be noticed that the leader, the one on the right, who goes first, has its horns "fore and aft." The other ox has its horns sloping backwards, and this is the case with every other member of the herd. It has been

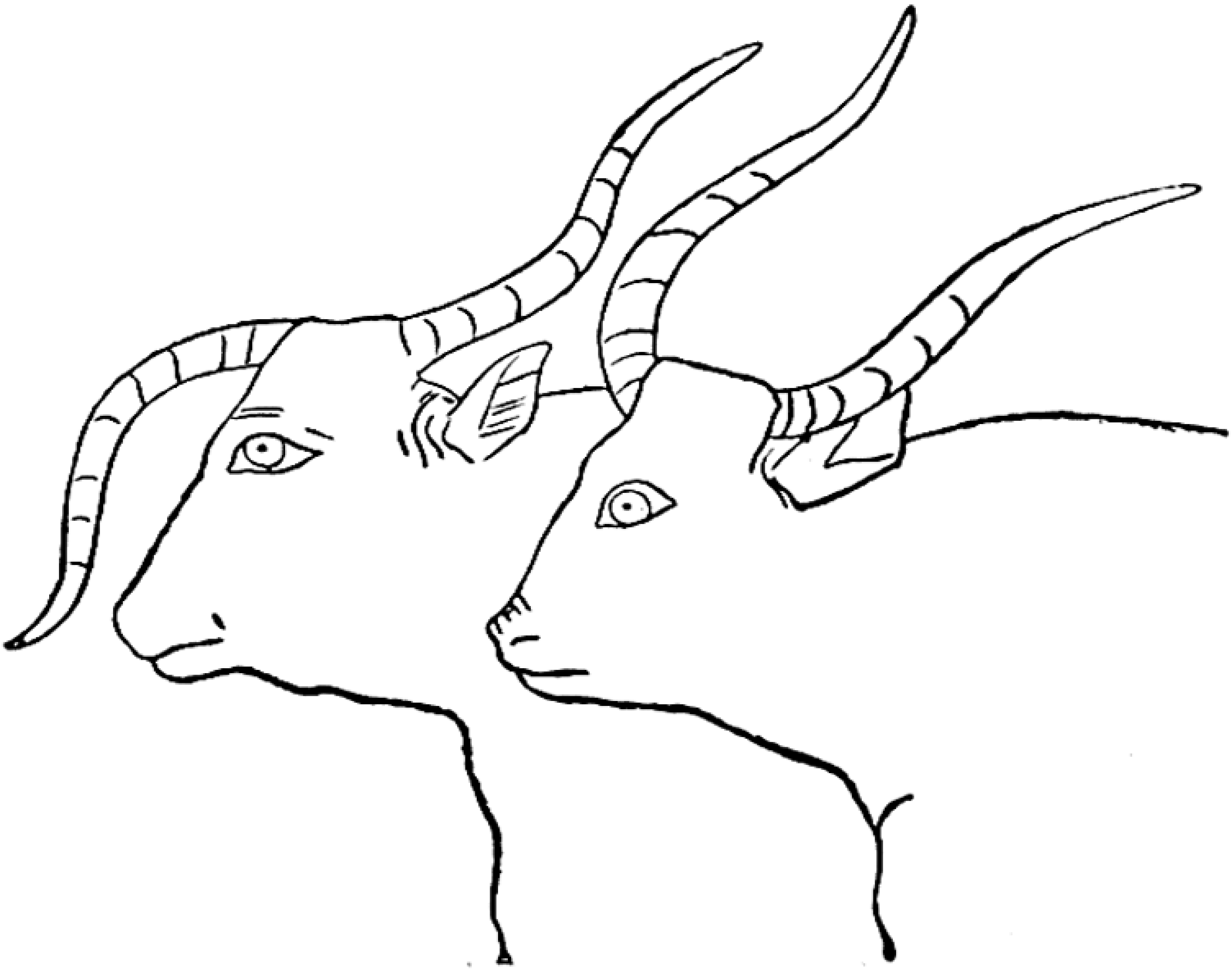

FIG. 4. PAINTING OF THE LEADER OF A HERD, 2000-1800 B.C.

said to me, over and over again, that the anteriorly and posteriorly directed horns, not only in the Egyptian pictures but also in the mediaeval representations of the yale, are due to ignorance on the part of the artist of the science of perspective. Yet here we find the leader of the herd with horns "fore and aft," the followers all with horns sloping backwards. It will be recollected that the modern "majok" is always the leader, and that it alone among the Dinkas has its horns modified. Another fact which convinces me that the Egyptian artists not only knew, but also drew what they saw, is that in the numerous pictures of asses and of the solid-horned ruminants that have come down to us, the ears of the asses and the horns of the deer invariably, as far as I have been able to see, slope the normal way.

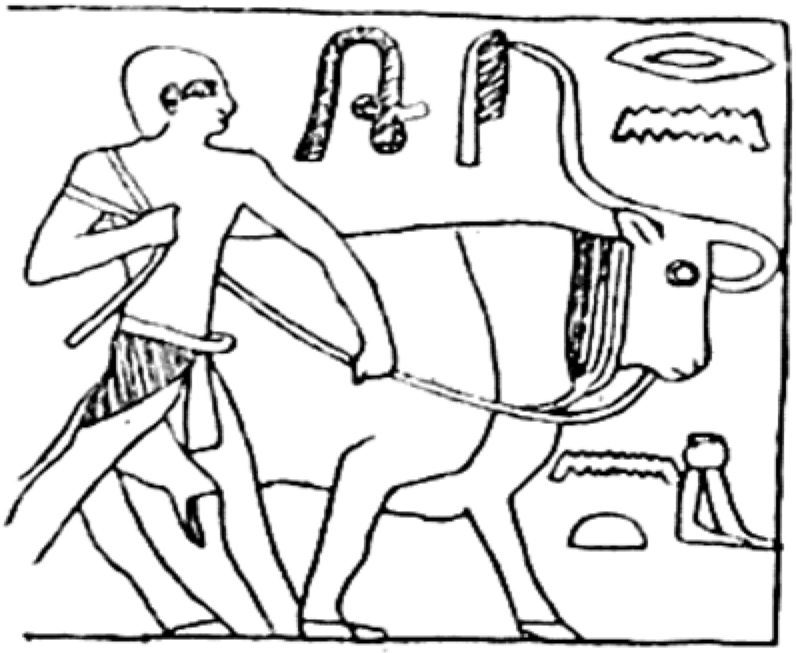

FIG. 5. FROM THE TOMB OF USER-NETER AT SAQQARA, 2700 B.C.

Fig. 4 is taken from Prisse d'Avennes *Histoire de l'Art Egyptien*, and is of the Middle Kingdom, twelfth dynasty, 2000-1800 B.C.[1] Another bull "with a crumpled horn," is from the Tomb of Ma'-nefer, and is of the Old Kingdom, fifth dynasty, 2700 B.C. Fig. 5 is again from the fifth dynasty,

[1] Lepsius, Bd. III, Ab. II, Bl. 70.

and is taken from the east wall of the Tomb of User-Neter at Saqqara.[1]

I hope that I have now succeeded in showing that this practice of mutilating or changing the direction of the horns of the hollow-horned ruminants comes down in parts of Ethiopia from a vast antiquity to the present time, and that it may very well have been the tissue upon which Pliny embroidered his phantastic conception of the "eale."

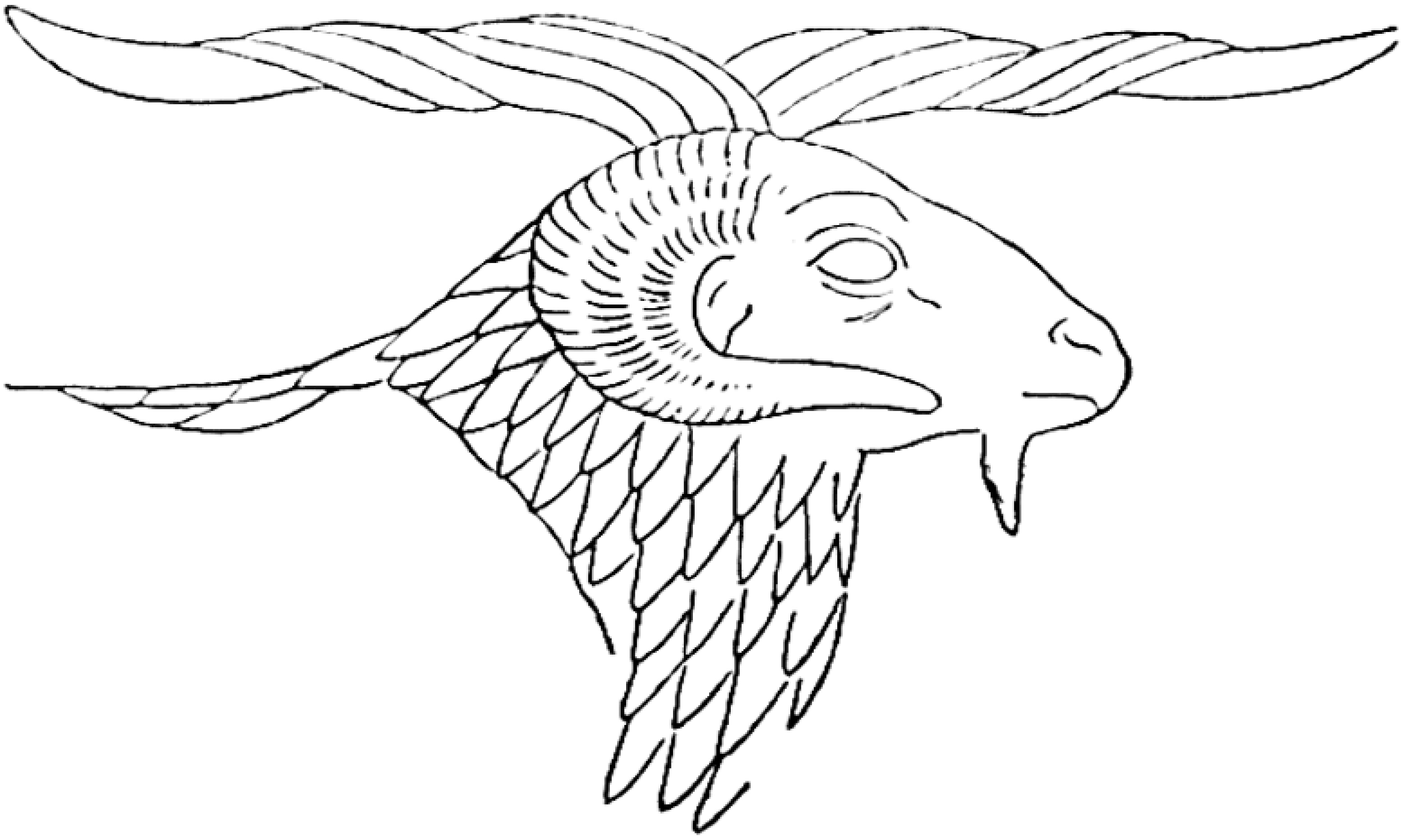

FIG. 6. A GOD WITH A FOUR-HORNED RAM'S HEAD, THE HINDER HORNS TRAINED FORE AND AFT

I am on much less sure ground when I suggest that fig. 6 is a four-horned ram whose posterior

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[1] Saqqara Mastabas. Part I, Pl. XXII.

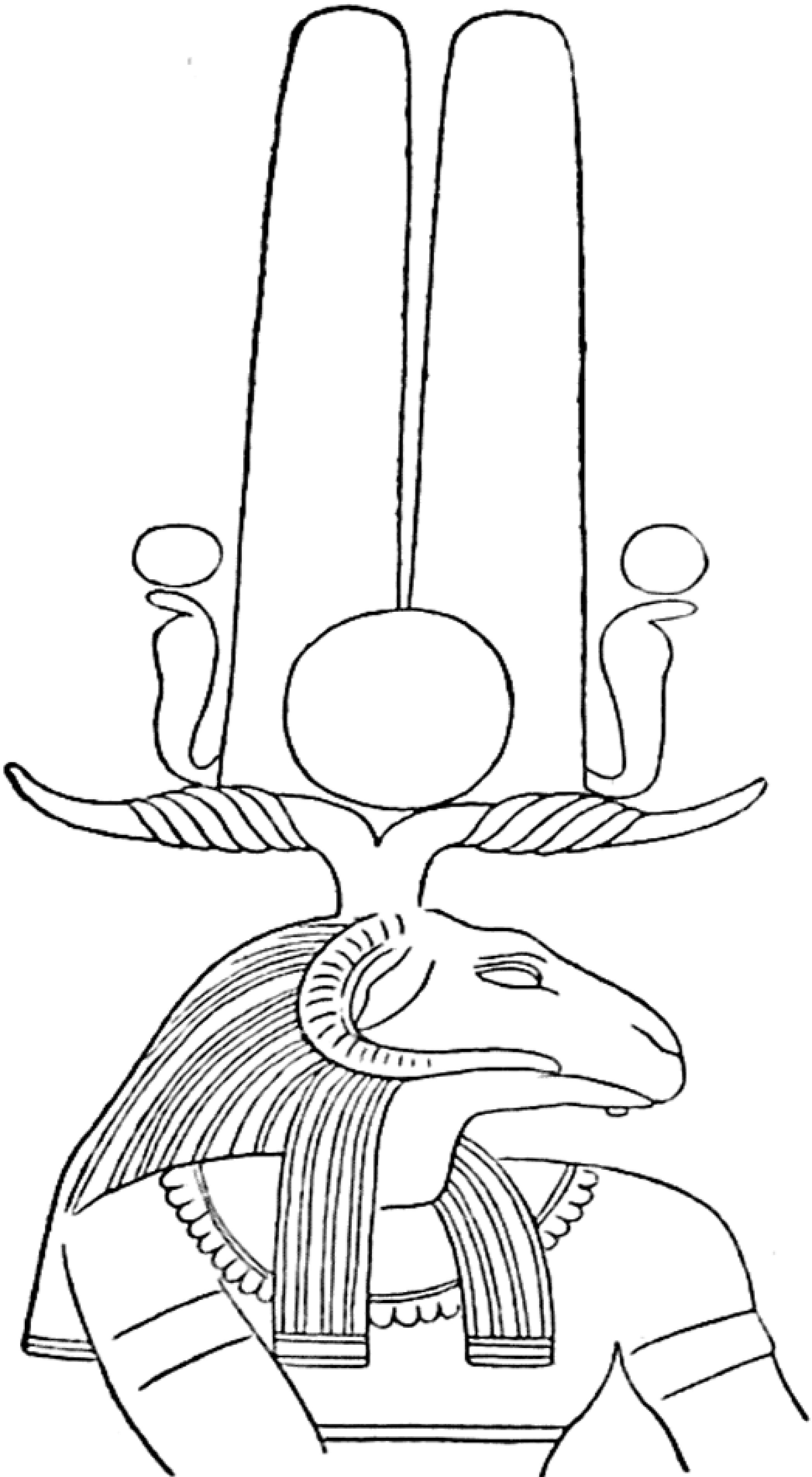

FIG. 7. HEAD OF THE GOD FROM THE TEMPLE OF ESNEH

The scene represents Vespasian before the god Khnumu.

horns have been trained "fore and aft." The figure is taken from Prisse (Atlas I), and is of the New Kingdom, eighteenth dynasty, 1449-1423 B.C. A similar head, now of a god, Khnumu, is shown in fig. 7, taken from Lepsius.[1] This is from the Roman period, about the time of Otho. Another drawing,[2] from an earlier period, the eighteenth dynasty, shows a human head with a similar arrangement of horns.

I believe I have succeeded in making a case for the yale being derived from rumours of these mutilated cattle among "the Ethiopians," and certainly I believe I have shown that the practice of training horns is a very ancient one.

Let us now return to Pliny senior, and here we are met with a slight difficulty, for Pliny senior evidently knew his Herodotus, or at least his Garamantians, for he tells us: "Boves animalium soli et retro ambulantes pascuntur, apud Garamantas quidem haud aliter."[3] "Oxen alone among animals feed walking backward, indeed, among the Garamantians they never do otherwise." Pliny, who, from A.D. 23 to 79, apparently recognized no connection between the Garamantian ὀπισθονόμοι and the eales; but, as we have said before, Pliny was an uncritical recorder of what was read to him day by day, and it is easy to understand that in this and many other cases he described what may have been the same thing twice.

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[1] Bd. IX, Ab. IV, Bl. 81.

[2] Lepsius, Bd. V, Ab. III, Bl. 63.

[3] *Nat. Hist.*, viii, 45, 178.

We have come to a period in history when tradition was more accounted of than observation; when the written word had more weight than direct observation. Pomponius Mela, the earliest Roman geographer (*circa* A.D. 43), who wrote *De Situ Orbis*, records " Apud Garamantas etiam armenta sunt ea, quae obliqua cervice pascuntur, nam pronis directa in humum cornua officiunt." " Among the Garamantes also are there cattle which graze with their necks awry, for when they bend forward their horns being directed downwards hinder them."

About the end of the second and the beginning of the third century A.D., Athenæus, a Greek grammarian and rhetorician, quotes in his *Deipnosophistae* (v, 64), Alexander the Myndian (first century A.D.) concerning these cattle:

" But that which is told by the same writer is incredible, viz., that there are in Libya some oxen which are called opisthonomi, because they do not advance when feeding, but feed constantly returning backwards, for their horns are a hindrance to their feeding in the usual manner, because they are not turned upwards as they are in other animals, but they bend downwards and hinder the use of the eyes."

Gaius Julius Solinus, whose date is probably during the first half of the third century A.D., the grammarian and compiler, the author of *Collectanea rerum memorabilium*, writes thus of the yale:[1]

" Est et eale, magnus ut equus, cauda elephanti, nigro colore, maxillis aprugnis, praeferens cornua ultra cubitalem modum longa ad obsequium cuius velit motus accommodata: neque enim rigent sed moventur, ut usus exigit proeliandi: quorum alterum cum pugnat protendit, alterum replicat, ut si ictu aliquo alterius acumen offenderit, acies succedat alterius " (Solinus, 52, 35).

The information of Solinus is obviously derived from Pliny and from Pomponius Mela.

The French priest and publisher, J. P. Migne, in his *Patrology* (v, 177, col. 86) gives the following description of the eale:

" Est bestia quae dicitur eale, magnus ut equus, cauda elephantis, nigro colore, maxillis aprinis, cornua praeferens ultra modum longa, ad obsequium cujus velit accommodata, nec enim rigent, sed moventur ut usus exigit proeliandi, quorum alterum replicat, et cum altero pugnat, ut si ictu aliquo alterius acumen offendatur, acies succedat alterius."

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[1] Polyhistor., Paris, 1577, Cap. LV.

"There is an animal which is called the Eale; it is as large as a horse, has the tail of an elephant, is black in colour, with the jaws of a wild boar, having inordinately long horns in front, adapted to conform to any movement it wishes; for the horns are not inflexible but move as required when used in fighting, one of which it doubles back and fights with the other, so that if the keenness of one is dulled by any blow, the sharp edge of the other may take its place."

In none of the few versions of the *Physiologus* that I have seen is the yale mentioned; but that work is so protean in its character that an account of the creature may very well occur in some of its many forms. The yale, however, makes a brave show in the bestiaries, and with the exception of one important feature, the bestiaries vary little in their account of our beast. I think a single quotation from one of the two bestiaries in the University Library will serve as the sort of information we may obtain from these sources. The bestiary I quote from came from the library of Dr. Holdsworth, Master of Emmanuel College, who died in 1649:

"Est bestia quae dicitur eale magnus ut equus cauda elephantis nigro colore maxillis caprinis [*sic*] cornua preferens ultra modum longa ad obsequium cuius velit motus accommodata. Mouentur enim ut usus preliandi exigit. Quorum alterum

[cum] pugnat pretendit alterum replicat ut si ictu aliquo alterius acumen offenderit acies succedat alterius."

"There is an animal which is called Eale, big as a horse, with the tail of an elephant, black in colour, with the jaws of a goat having inordinately long horns adapted to conform to any movement it wishes, for they are shifted as the necessity of battle requires; one of which when fighting it extends and doubles back the other, so that if by any blow the keenness of one is dulled, the sharp edge of the other may take its place."[1]

The account in our other bestiary is virtually the same except that it has *aprinis* for *caprinis*.

The illustrations with which the bestiaries abound are of no scientific value. The animals drawn in these volumes are, in almost all cases, the product of imagination and not of evolution. In the later times bestiaries began to be replaced by learned works which were the direct forerunners of our modern text-books, and, although still uncritical, yet omitted some of the fantasy of the mediaeval writers. Thus, in his *Historie of Foure-footed Beastes*, 1607, the Rev. Edward Topsell, who was resident at Christ's College in 1587, gives the following description of the eale, now known as the yale or jail:

"There is bred in Ethiopia a certain strange

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[1] MS., Kk. 4, 25.

Beast about the bignesse of a Sea-horse [not a 'river-horse'], being of colour blacke or brownish: it hath the cheeks of a Boare, the tayle of an Elephant, and hornes aboue a Cubit long, which are mooueable upon his head at his owne pleasure like eares; now standing one way, and anone mouing another way, as he needeth in fighting with other Beastes, for they stand not stiffe but bend flexibly, and when he fighteth, he alway stretcheth out the one, and holdeth in the other, for purpose as it may seeme, that if one of them may be blunted and broken, then hee may defend himselfe with the other. It may well be compared to a Sea-horse, for aboue all other places it loueth best the Waters."

I confess that Topsell has not, in this instance, improved on Pliny; but in some parts of his folio volume he—although also a compiler—shows a little more effort to get at Nature. The point of importance in the accounts of the bestiaries (referred to previously) are the words "maxillis caprinis" and "maxillis aprinis." When I first looked into the matter, I found in the first bestiary I consulted "maxillis aprinis," and I wondered whether an initial "c" had been dropped by a careless transcriber; hence I was pleased to find that in the MS. from which I quote "maxillis caprinis" is the form used. It needs little stretch of the imagination to conceive some traveller from

" Afric's shore " relating that these curious cattle with horns pointing both ways had a face like a goat; but it is difficult to underſtand how even Pliny himself can have believed they had " maxillis apri." Here, again, I believe an initial " c " is wanting.

I do not know when the tusks of the wild boar were implanted in the jaws of a yale. They certainly are not found in the yales on the early sixteenth-century gateway of either Chriſt's or St. John's College, or on those over the doorway of the Maſter's Lodge in the former College, or on his seal which comes down from the Foundress, Lady Margaret, mother of Henry VII. All the yales here depicted have heads rather like goats, and with a goatee beard, like that of the typical American Senator of twenty years ago. Still, heralds are no zoologiſts, and in the later representation of yales, both in emblazoning arms and in ſtatuary, they have implanted into this ruminant's head large canine teeth. Moreover, when colouring is used, these teeth are gilded. The general effect recalls the golden grin of Mr. Johnson, the American negro pugiliſt.

I will now conclude my account of the hunting of the yale with a description of the yales of my College, although at the siſter foundation there has been a certain degeneration of our common foundress' supporters, so that in the bookplate of the library of St. John's College and in the arms on their notepaper the tail "cauda elephanti" has become a mere stump and the horns (see the yale at Hampton Court Palace—as far as I can judge from a photograph the horns of this statue are not fore and aft) parallel and lyriform. The animal has deteriorated almost into an antelope.

At Christ's College, by some lucky chance, the yale has been preserved pure and undefiled. The arms on the outside of Christ's College gateway, which are better preserved than those on that of the sister College, show animals with a deep chest and a somewhat slender hinder body. Their faces are like those of goats, being provided with what is called in the United States a "chin-beard." They have short ears and a low mane. The horns are not very long, but longer than the head, ringed; and while one stretches forward over the face, the other stretches backward over the body. This, did we not know the habits of the yale, might be put down at first sight to ignorance on the part of the sculptor of the art of perspective. They are "bezanté," and the bezants, which are uniformly scattered, are bezants and not natural spots. This is, perhaps, a point in favour of their being antelopes, because, with the exception of a few species, such as *Tragelaphus decula* and *T. scriptus*, which have a few bars and spots, antelopes are not spotted.

I can see no trace of the " cheekes of a Boare." A comparison of the tail with that of the elephant is very unfair to Lady Margaret's supporters. Of all the parts of its external anatomy, the one the elephant has least reason to be proud of is its tail, whereas the tail of the yale is long, well formed, and ends in three most comely tufts. Both supporters are males. (All the yales I have seen are males, a sex which recalls the " majok.") I cannot see any traces of tusks. All four hoofs are cleft. The yales over the door of the Master's Lodge are similar. They are deeply undercut, but are of a later day, for they are not shown in Loggan's print of 1688. A single yale, very deeply incised, occurs on the seal of the Master of Christ's. It is apparently lying down, and is, I believe, in heraldic language, either " couchant " or " lodged."

I trust that in these pages I have shown that the yale is derived from the modified cattle which have had their horns artificially altered from the earliest historic times until to-day, and not, as some writers in *The Times* in May 1911 considered, from the antelope. It is true that in some cases it has degenerated into an antelope, but we must never forget that Æsop's ape " wept on passing through a human graveyard, overcome with sorrow for its dead ancestors."

CHAPTER V

CAMBRIDGE UNIVERSITY LIBRARY

IF ANYONE—AS MANY FOREIGNERS do—asks to be shown the University at Cambridge, we are rather in a dilemma. We can, of course, show them the Senate House, the Library, the University Church, the Museums, the Laboratories; but these buildings are not wholly controlled by the University and form but a very small part of it. We cannot, as you can abroad, point out a collection of buildings dotted over a *campus*, as they are, for instance, in the United States, and say: " Behold, there is the University! " But at the end of the fifteenth century we could have done this. Then the first court, that is the east court, of the present Library contained all the University buildings then in existence. This court comprised all the rooms which were required for the public life of the scholastic community at that period.

The north side was the first to be completed, and it is said that the foundation stone was laid by Sir Robert Thorpe, Master of Pembroke College, 1347-64, afterwards Lord Chancellor of England. On the ground floor it at first sheltered the School of Theology. Above this is the present Catalogue Room, which was then partly used as the Senate House and partly as the Regent House or " New Chapel," and this lasted until the year 1730.

The western building, which soon followed, had on its ground floor the school which was in use for Canon Law, and until within recent times had "sedilia," such as you still see used in the Lecture-Rooms of Italian Universities. Above it was the Terence School.

The south side was completed about 1470. It was the home of Civil Law, and above it was the Library of the University.

The year in which the south side was completed the eastern portion was taken in hand. This was a comparatively shallow apartment and was used as the " Place of Judgment " for the Vice-Chancellor, and as a vestry for the doctors. The first-floor room above the Judgment Chamber—little more than a passage—housed the smaller or Rotheram Library.

The façade of the eastern portion, which lasted rather less than 275 years, was, as Loggan's print records, of singular beauty. It had a somewhat Italianate appearance, in no way over-decorated, and in a way resembled one of the façades of the Speaker's Court in the Palace at Westminster. The gate of entrance was rather north of the centre of the east wall. When a new façade was added to the Library in 1754 this gateway was removed to Madingley Hall, and through it you now pass into the stables of that mansion.

When Canon Law was prohibited by royal injunction in 1535, Dialectics took possession of the western room, to be followed in the time of Edward VI by Rhetoric, and here in Parker's time Civil Law and Greek were also taught. Later these gave way to Physics and Law, while in Loggan's time Philosophy was being taught on the ground floor.

A room in the eastern building was handed over to the Regius Professor of Divinity in 1794, and here divinity remained until the Literary and Divinity Schools, opposite St. John's College, were built (1879). Gradually the Library was pushing out the University teaching, the University administrative staffs, and those responsible for the University ceremonials and records.

The deplorable condition of the books in "an old mean building" is depicted by Conrad von Uffenbach in 1710. The books, he says, were ill arranged in utter confusion. One of the rooms is pronounced as being half empty, and there seems to have been no need for increased accommodation until 1715, when King George I presented to the University the library of John Moore, D.D., Lord Bishop of Ely, which he purchased after the Bishop's death for six thousand guineas—a gift recorded in two well-known epigrams which, with great self-restraint, I refrain from quoting. The Bishop's library, consisting of printed books and manuscripts, exceeded thirty thousand volumes, and accommodation had to be found for them. At first provision was made for the new accession in the old school in the first floor of the western range, and as this proved wholly insufficient, it was decided to add to the Library the Regent House or "New Chapel," that is to say, the present Catalogue Room. But still more space was wanted, and the Senate had no accommodation to offer.

It should here be mentioned that at this date the whole of the Senate House Yard was covered with buildings and small gardens, which were then gradually being bought up by the University.

In 1719 the eminent architect James Gibbs was invited to prepare plans for a house for the Senate, based on rough general sketches prepared by James Burrough of Caius College. These plans are indicated in the illustration facing p. 92. It will be seen that Gibbs proposed a central library with two lateral buildings joining the library. The northern wing is the present Senate House, but fortunately it was never joined with the old Library, thus leaving a clear air space between it and the present Library.

There was a time, however, when a colonnaded corridor connected the two buildings. The "Attaching Scheme," as the plan for uniting the new building with the Library was called, was bitterly opposed by the Master of Caius, among others, who wrote to the Vice-Chancellor a letter in which he spoke of this plan as " a Scheme for which I do in my Conscience believe the whole World will condemn us; a Scheme that will so effectually shut out of View all that noble fabric Kings-Chapell, that I wonder how the University or the College can bear it; and a Scheme so injurious to Caius College that I am fully resolv'd not to bear it."

The Master of Caius won his point, though he lost his action when he tried to get an injunction from Chancery to stop the building, and, as is mentioned above, the building is " detached."

The Senate House was opened in the summer of 1730, having cost £13,000, exclusive of the site. A quarter of a century later the new front of the Library was at length begun, this front is shown in the illustration facing p. 92. The architect was Stephen Wright, and he also gave a plan for erecting a building on the other side of Senate House Yard similar in size and appearance, but some twenty feet farther south than the original design by the great architect Gibbs. The new façade of the Library was finished in 1758 and cost £10,500, the greater part of which was met by subscriptions. As Cole remarks: " Probably most of the clerical subscribers, and possibly many of the laity, put in here as into a lottery of the Duke of Newcastle's Formation—Translations, Places and Preferment were what was fished for and many succeeded to their Heart's Desire."

The new façade added to the internal accommodation of the Library a space equal to the depth of the existing colonnaded passage. This gave a noble room on the first floor, handsomely fitted and decorated within.

The Library was gradually squeezing all other University activities out of the building. Literature and Divinity were evicted in the year 1879, when the building of the Selwyn Divinity and Literary Lecture Rooms was completed. The Squire Law Library and Lecture Rooms were erected early in this century. Perhaps the last relic of University rule was the Council Room where the Council of the Senate were wont to sit. This room also is now absorbed by the Library.

In spite of these additions to the working rooms the contents of the Library continue to exceed all available space and it is not possible to keep pace with the overcrowding, and it looks as if the books will soon be tumbling out into Senate House Yard. Everything is a makeshift and a hand-to-mouth arrangement. Certainly something should be done, and certainly it should be done soon.

The proposal recently before the Senate was to erect a building, practically a facsimile of the Senate House, on the south side of Senate House Yard, and to use it for enlarging the Library. Gibbs' court has never been completed, although attempts were made to do this in 1791, and again a century later, when it was proposed to use the building for accommodating the Law School and the Library. It was thought, if this were done, that relief could be obtained for from sixty to a hundred years. The proposal was opposed by some members of the Senate on aesthetic grounds. It would undoubtedly impair the view of King's College Chapel seen from the corner of Trinity Street, but as a matter of fact that view is hardly seen by anyone but the comparatively few passers-by faring south from St. John's or Trinity Street. But going in this direction, when you arrive at Bowes' corner your attention is entirely occupied in getting safely across St. Mary's Street, and it is only when you arrive at the north-west corner of St. Mary's Church that you feel justified in looking at views. Compared with the centre of the town, Trinity Street is deserted, except at the hours between lectures, and then most of the passers-by, being on bicycles or motor bicycles, have no time to spare for views.

Advancing south, passing the west end of the

University Church, about one hundred feet beyond would bring us past the new building (were it there) and we should get the same wonderful east-end view of King's Chapel which we have always known. One of the very best views of this noble temple is from the south-west of Cambridge, where you see it towering above Gibbs' beautiful building in the first court of King's College—the classical lines of the latter serve as an admirable foil to the English Perpendicular architecture of the former.

Another view which would be missing is that from the present entrance to the Library of a picturesque line of houses on King's Parade with a strikingly beautiful sky-line.

Much, however, would have been gained had the proposal been adopted. Quite apart from the absolute necessity of providing more accommodation for the Library, we should complete the design of one of the greatest architects of the eighteenth century, and we should have one of the most beautiful courts in Europe, open, as a court should be, on one side.

The constitution of Cambridge University is so democratic that it is almost impossible to make any progress, and the number of schemes that have been before the Senate in the last two centuries for the enlargement of the Library is difficult to estimate. Many advocate the building of an entirely new institution, but the cost of moving the present library, quite apart from the cost of the site and of the new building, would run into hundreds of thousands of pounds. It is appalling even to contemplate the work of re-cataloguing and rearrangement. The alternative seems to be to divide the Library into two.

CHAPTER VI

THE CAMBRIDGE MUSEUM OF ZOOLOGY

> . . . in his needy shop a tortoise hung,
> An alligator stuff'd and other skins
> Of ill-shaped fishes.—*Romeo and Juliet*, Act V, sc. I.

THE ZOOLOGICAL MUSEUM FORMS one of a very large number of buildings scattered over three sites, the centralmost of which was once the home of the Augustinian Friars. The last part of the Friary was pulled down as late as 1720, though certain arches of other remains of the building are still to be seen in the basements of the new Art School. This site, with adjoining areas, was bought in the year 1760 by Richard Walker, Vice-Master of Trinity College, and was presented by him to the University for a Botanic Garden, the last relic of which is the *Sophora* tree which blossoms freely every spring near the Medical Schools. From this tree is extracted—or was extracted—the royal yellow for the robes of the Chinese Emperor. A second site was the garden and certain premises belonging to Mr. Mortlock. These were bought in 1896 and here now stand the Examination Rooms, the Arts School, and the newer parts of the Cavendish Laboratory. A third great series of buildings are those across the road on what were once the grounds of Downing College.

The Cambridge Museum of Zoology

The collections in the Museum of Zoology have a twofold origin. The Cambridge Philosophical Society, which was founded in 1819, had built themselves that spacious but unlovely house which now shelters the Hawks Club and overlooks the old churchyard of All Saints'. Here it had lecture-rooms, reading-rooms, a library, and a museum. But by 1865 the membership had so diminished that the house had to be sold, and in that year its museum was handed over to the University. It was essentially a collection of British fauna, and was to a large extent of only local interest. Henslow had much to do with its formation, but Yarrell, Leonard Jenyns, who described it, Charles Darwin, who presented the fish collected on his voyage in the *Beagle*, and other well-known naturalists were all contributors.

The second source of the Cambridge zoological "rareties" was due to the Professor of Anatomy, for until the appointment of Professor Newton in 1866 there was no Professor of Zoology in the University, but the occupier of the Chair of Anatomy taught not only human but comparative anatomy. Sir Busick Harwood, Professor from 1785 to 1814, took a wide view of his subject, lecturing and demonstrating the anatomy of such fishes as the turbot in the morning, and serving the more edible portions of that fish at his table at the curious—and one suspects uncomfortable—dinner hour of four o'clock. His successor, Dr. William Clark, was also very energetic in acquiring specimens for the museums, and many collections were added in his time. His son, Mr. J. W. Clark, one of the most notable figures in the University during the last sixty years of the nineteenth century, added greatly to the wealth of the collection. Especially was he interested in marine mammals. Professor Newton was also indefatigable as a collector, and it is due to his love of birds that the whole of the avian collection is sheltered in a special bird-room and the rest of the animal kingdom under another roof.

However, it is with the present condition of the Museum, and not with its history, that this article is occupied. All museums serve a double purpose. They have to interest and educate the general public, to awake the interest of the uninformed by skilful display and by the provision of adequate labels. Every specimen ought to teach a lesson, and a lesson easily understood by the people. Its second purpose is that of promoting research and increasing knowledge. Here it appeals to the advanced student, the specialist, and the researcher. The exhibited specimens in the open museum appeal to the student and often to the uninformed, but behind what is open to the public in every great museum are the research rooms, the storerooms, the closed cabinets of specimens, the heap of unarticulated skeletons, which form the material for research and investigation by the specialist.

There is always grave danger of trying to exhibit too much. To begin with, too crowded collections, like Mr. F.'s Aunt, "terrify and confound the mind." Huxley's view was that a museum should be a good text-book. The text being the labels and the specimens the illustrations, but in three dimensions instead of two. Every specimen should tell one definite tale and explain one definite point; and every specimen should have a certain space around it, or, like the pictures in the Royal Academy, its effect is destroyed by the close proximity of the others. Anyone who remembers the hanging of the pictures in the National Gallery before and after the war will readily appreciate the necessity of not crowding too closely together objects which are intended for public exhibition. Then again, it must not be forgotten that the public part of the museum is by far the most expensive to arrange and to maintain. Dried specimens and skeletons deteriorate, spirit specimens evaporate, and all require attention and care.

Properly to display the specimens so as to teach a lesson and tell a story requires much thought. For instance, take the case of the little insectivore

Tupaia (one of the Eastern tree-shrews). In the case devoted to the Insectivora should appear its skeleton and a stuffed specimen should be placed in the general systematic part of the museum. Again, it can be used and should be used in another case as an example of mimicry and convergence in company with specimens of the squirrel. Further, it should find a place in the cases illustrating geographical distribution and in any comparative series of skeletons or organs its skull, skeleton, and various organs should be again displayed. In this way a museum should follow and illustrate many different lines of thought: classification, past history, geographical distribution, natural history, such as habits, parallelism, convergence, protective resemblance. All these various points of view are necessary to understand the present doctrines of Darwinism and Mendelism. But there are still further needs. Comparative zoology (soft anatomy and osteology) must not be forgotten, and this requires for its illustration series of dissections of organs, bones, etc. Finally there is the great subject of the economic use of animals by man. The recent discovery—for it is comparatively recent, being almost an affair of this century—that many deadly and permanently disabling diseases are conveyed from man to man or from the lower creatures to man by biting insects and ticks, would offer scope for a large museum in itself. Models of the malaria mosquito, the yellow fever mosquito, the tsetse-fly, and of the several stages in their life-history and development should be exhibited and diagrams of the parasite they convey should be prepared and carefully labelled. It is a matter of supreme importance not only that the student but that the general public should appreciate how these diseases can be controlled and even have been controlled within the last twenty-five years.

There has been an enormous advance during the last quarter of a century in the technique required by those responsible for museum exhibits. Taxidermy has long passed the time when stuffing an animal consisted of filling up a skin with hay or sawdust. The old cabinet of " curiosities and rarities " such as Evelyn visited and described in his Diary has long since passed away.

Anyone who has noticed the interiors of Holbein or of the contemporary Dutch artists will remember what a large number of things are suspended from the roof of the chambers depicted. All sorts of things we should put away in cupboards or drawers were in their days hung from the walls or from the beams and rafters of the ceiling. For want of room this is the state of affairs which still obtains in the Cambridge Museum of Zoology. Great skeletons of whales, porpoises, narwhals, hang in the air, a position not well adapted for their full use as demonstration specimens. In fact, their condition recalls again the old apothecary's shop described by Major in his *Unvorgreiffliches Bedencken von Kunst-und Naturalien-Kammern*, p. 16:

> " Here *Mummies* lay most reverently stale,
> And there the Tortoise hung her Coat o' Mail;
> Not far from some huge *Shark's* devouring head
> The Flying-Fish their finny Pinions spread.
> Aloft in rows large Poppy Heads were strung
> And near a scaly Alligator hung."

Our mummies have been sent to the Museum of Human Anatomy, our poppy-heads to that of the School of Botany, but the rest are still suspended in our " needy shop."

The modern taxidermist must not only have a knowledge of superficial anatomy, but he must have some knowledge of the habits and attitudes of the animal he is trying to preserve. Taxidermists must be skilled in the dressing and curing of skins, in the manufacture of *papier-maché* or plaster " mannequins," and, in the case of such specimens as elephants and whales, with the limitations of the use of wrought iron. The joiner and the glazier also play a large part in the display of specimens, and very accurate and very skilful cabinet-making and glazing is demanded. Then, again, the restoration of fossil forms requires a skilled specialist. This is much better understood in America than with us. There are comparatively few fossil forms which have been picked out from their bed in the fossiliferous rocks and mounted in three dimensions in this country. In the American Museum of Natural History in New York there are scores of these. But to extract and mount these bones and restore them to the right position requires profound knowledge of ancient and modern osteology and of what may be called the engineering aptitudes of animals, and considerable skill in making plaster moulds and casts to represent lost parts.

Even the mounting of the skeletons of vertebrates demands a knowledge of their posture. The modern museum is no longer content with a mammal standing like a table on its four legs. Its various bones must be articulated so that the whole presents a natural attitude, and this again demands an expert knowledge of the capabilities of wrought-iron stands. The American Museum of Natural History in New York affords numerous and striking examples of these naturally poised skeletons, especially among the Equidae.

With regard to invertebrates those that are mounted in bottles require an expert knowledge of chemistry; the reaction of various agents on colour must be studied. Contrary to what is usually held, spirits have a depressing effect. Specimens mounted in alcohol become uniformly dull, uninteresting, and colourless, while, as a rule, specimens mounted in glycerine or formalin retain the vivid colours of life. Even the sealing of bottles is not so simple a matter as might be thought and has not yet been thoroughly mastered. Dry specimens exhibited in cases require a highly specialized form of joinery. Certain mites and certain small insects infest such cases, and unless the greatest care is taken to make the cases air-tight these mites and insects make their way in and feed upon the dried specimens. One of the most successful ways of closing the case and making it practically air-tight is to line the edge of both the lid and the upright ledge on which it closes with thin strips of velvet. Velvet fits into velvet, and the consequent filtration of the air makes the case almost impervious to any harmful intrusion from the outside. Problems of heating and lighting and ventilation also arise, and unless care is taken even the slight annual variation in the temperature of Great Britain may cause the cases as well as the spirit in sealed jars to expand or shrink, and it is much more costly to put the wrong right than to have the matter right from the beginning.

Labelling is another grave difficulty. Every museum should have at the very least a small hand printing press, and in the case of spirit and glycerine or formalin specimens the printed label —which should tell a lucid story and illustrate and expound the points the specimen is intended to illustrate—should be placed inside the bottle. If that is done the label will remain fresh and tidy. Pasting it on the outside of the glass jars leads in time to its fading and decay. The background of such mounted " wet " specimens is again a matter of careful thought, some looking better with a white and some with a black glass support. Skill in drawing diagrams is also a very necessary attribute of the museum curator. Much care must also be expended on selecting the specimens to be exhibited. A single animal by itself seldom teaches much. As far as possible it should form part of a progressive series either in comparative anatomy or illustrating some definite point, *e.g.*, the light-producing or phosphorescent organs which occur in such diversity and in such different forms in nearly all the great classes of animals.

Having decided what he wants to exhibit the curator must then overhaul his specimens. From the store collection he selects what he needs, takes them to the preparation room, and then arranges each so as to teach some lesson. To complete his ideal exhibit specimens have often to be obtained from afar, and this again requires time and a wide knowledge of those travellers, collectors, and zoologists who are willing to help. Having got his specimens together, the curator has carefully to arrange what part of the museum the showcase shall be placed in, and the construction of the case cannot be finally settled until its position in the museum is known. The final position of his case with its new exhibit requires very careful plotting and very careful thought, and indeed the up-to-date museum curator has to be as expert in preparing his plans and in modifying them as the drawing clerk in an architect's office. Each case ought to have a definite policy of its own from its beginning, and the same is true of the whole museum. Otherwise the net result is a chaos of isolated specimens with no unified thought. In a museum like the Cambridge Museum of Zoology, which is the workplace of a very large number of students studying zoology, the dominant thought is that of a teaching museum rather than that of the dramatic and scenic displays which play so large a part in great American museums.

A heavy piece of work is the preparation and keeping in being of an " up-to-date " catalogue. This is probably best done in the form of a card catalogue which needs daily revisions and additions.

Such a register must include a list of all new additions, gifts of specimens, and those that have been bought or lent. It is wise also to keep an address book of all who have shown any interest in the collections, for all over the civilized and uncivilized world are scattered Cambridge graduates, "home-sick to a man," as Emerson has it, men willing to help and who love to help their old University if only they know how.

The British Museum besides its function of interesting and teaching the inhabitants of, and visitors to, London has another even greater duty. It aims at being the storehouse for the Empire of every described form of animal, a storehouse where the professional zoologists of the Empire can find accurately named specimens for comparison. This naturally involves much research work and the public has little conception of the great amount of valuable work done by its staff, but to this its "Catalogues" and the many papers published every year in scientific journals bear witness. It is the manifest duty of every other museum to assist the *National* collection by handing over *type* specimens while spending their energies in forming teaching exhibits or local collections according to whatever purpose they are required. In this respect the Cambridge Museum has done its duty.

The collections of our Zoological Museum rank among the highest in Europe. Many of the specimens are unique. The number of great auk's eggs and the series of extinct British "coppers," the collection of marine mammals, the Macandrew collection of molluscs, the specimens in the Bird Room (which formed the favourite study of Professor Newton) are among a few of its outstanding features. The amount of material undisplayed and practically unworked is enormous.

The building, however, in which the chief exhibits are housed is out of date and the difficulty of keeping it weather-proof is great. The annexes which have been added from time to time are dark, and are about as ill-devised for properly exhibiting specimens as can be imagined.

It is difficult to give an idea of the state of overcrowding. In many cases smaller mammals crouch under the skeletons of larger specimens, while the whale and dolphin are suspended from the roof. Looking down from the ill-lighted galleries the appearance seems chaotic, yet under the care of the present Superintendent order is being gradually evolved.

The case containing the whales is an example of a successful exhibit. Each specimen stands out distinct from the others. The stuffed cetaceans are in the neighbourhood of their skeletons, while special points are elucidated by the display of skulls on the floor. An even more attractive case displays the essential features of the Order *Primates* showing the comparison between the bones of the limbs and skulls of the lemurs and of the anthropoids, all adequately labelled and all telling a tale.

Another case shows the habits and natural position of the sloths and anteaters. When Waterton first described the habits of the former he was reviewed by Sidney Smith, who informed the somewhat incredulous public that " the Sloth lives suspended and sleeps suspended, in fact he lives his life in a state of suspense like a young curate when he is distantly related to a bishop."

Another most admirable collection which has been prepared by Dr. Hugh Scott and Mr. Charles Lamb is the series of cases exhibiting the life-history of various insects. There are nearly two hundred drawers which can be consulted by the numerous students of entomology in a special Insect Room. This collection is the nearest approach that has yet been made to Huxley's idea of a museum being an illustrated text-book.

To most millionaires zoology seems an abstract subject of little commercial value, and in truth there is not " much money in it." Nevertheless, it is a fascinating study, and largely through his knowledge of it Darwin altered the concepts of the Universe and remodelled the world's ideas of the fundamental origin of life.

If we are to expand at Cambridge we must have new buildings, and in the present state of the building trade this will require a very large sum. To build an adequate museum with its macerating rooms, storerooms, Superintendent's rooms, library and research-rooms, and to equip such a building, would cost about £250,000. In America it would be possible to raise such a sum; it ought not to be impossible to do so in England had our great moneyed magnates a wider and a truer vision of the advancement of knowledge.

Most books in the library takes
mentions of the leading [illegible] and
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CHAPTER VII

THE FAUNA OF KING'S COLLEGE CHAPEL, CAMBRIDGE

A VERY INTERESTING LITTLE MONOgraph on the fauna of King's College Chapel, written by Mr. A. D. Hobson, B.A., of Christ's College, and Mr. L. H. Matthews, B.A., of King's College, has recently been published in the *Annals and Magazine of Natural History*. Apart from specimens of *Homo sapiens* whose presence is but sporadic, only two vertebrates were found, the Barbastelle Bat and the pigeon *Columba livia*.

A single specimen of the Barbastelle Bat was taken in October of last year. This species of bat is one of the rarest of our British species, and only once before has been recorded from Cambridgeshire. It is much commoner over Middle and Southern Europe, and extends into Asia. Unlike many bats, it is solitary in its habits, and hence but one specimen is generally taken at a time. It does not seem to frequent the same resting-place day after day, but changes its diurnal sleeping-place with great frequency. Usually it is found in crevices in trees or walls, between rafters, under thatches, or behind cottage windows.

King's College Chapel has a double roof. From the floor to the under surface of the inner roof, the beautiful fan vaulting of which is the wonder of all architects, is just eighty feet. Above this stone roof is a space which varies in height from seven to ten feet, and this space opens to the outside by certain windows through which the pigeons gain access to their homes. It was in this inter-roof space and on an unused spiral staircase leading to it that the chief fauna were found. In the main they centre round the second vertebrate, the pigeon *Columba livia*, and consisted of animals and larvae that lived on or in the pigeon, or lived upon the unused mouldering food of the birds, or finally lived predaceously upon one another.

Only one species of mollusc was taken, a snail *Helix arbustorum*, of which a single living example and one empty shell were found in a dark corner of the roof space. It is difficult to know how they got there, unless both were introduced by the pigeons.

Spiders were, however, very plentiful, and were found in all parts, but they have not as yet been identified. Little pseudo-scorpions or false-scorpions, with their superficial resemblance to the real article, were found in numbers among the rubbish. They are predatory little creatures, very tidy and well set up, and they probably feed on the other animals which infest the pigeon refuse. Quite a number of mites were found: *Glycyphagus*, which is allied to the cheesemite—members of this genus sometimes bore into the skin of man and other animals; *Aleurobius farinae*, which destroys stored grain; a species of *Liponyssus*, which feeds on the other mites; *Dermanyssus*, which is parasitic on the pigeon and is very common on fowls and on cage birds. Then there is the *Argas reflexus*, a large tick which has also been found in Canterbury Cathedral. This so-called " marginated tick " is yellow and white—the Papal colours. It is common near dovecotes and pigeon-houses, and may attack people sleeping in their neighbourhood. Its bite causes much irritation, and sometimes leads to vesicles and ulcers. At one time it was common in Canterbury Cathedral, and so worried the worshippers that it took all the eloquence of the " Very Reverend the Dean " to overcome its repellent powers.

There are also a large number of insects. The Peacock Butterfly and the Small Tortoiseshell Butterfly might have added a certain beauty to the scene, but they were only found hibernating. The larvae of one or more species of Tineidae moth were there. These larvae are very common in obscure places; a well-known and most destructive example of this group is the clothes-moth. Among beetles specimens of the Staphylinidae were found. The most familiar example of this group in our country is the well-known Devil's Coach Horse Beetle. Both the adult and larval stages of the

Dermestidae were found during the summer. These interesting beetles are capable of living in large numbers on a diet of dried horse-hair, and are sometimes very destructive. Another beetle living entirely on the pigeons' refuse is the *Cryptophagus badius*, which also frequents wasps' nests and the nests of bumble bees. It has a curious habit of clinging to the bumble-bee's legs, and is so transplanted from flower to flower, where it takes its food, and then back again to the nest of the Bombus, where it breeds. *Ptinus*, another beetle whose larvae feed on dried animal material, was also found. Some species of this genus will nourish themselves for generations on a diet of pure opium. One of them is responsible for the so-called weevilly biscuit known to every sailor. The common meal-worm, *Tenebrio molitor*, was frequent in the refuse.

Only two flies were taken, *Fannia*, the smaller house-fly or latrine-fly, which is common enough in our rooms in the late autumn, buzzing about around the chandelier or in the windows, and which is frequently thought by the uninformed to be a young stage in the house-fly's life-history. The bluebottle was common enough, its larvae devouring the dead pigeons. There were only a couple of fleas, the pigeon-flea *Ceratophyllus columbae*. This species is allied to *Ceratophyllus fasciatus*, which

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is an active agent in conveying plague or the old English "Black Death" from rats to man. The second flea, *Ischnopsyllus hexactenus*, was found on the Barbastelle Bat; it is a common enough semi-parasite of many bats.

One species of bird-louse, which is a well-groomed, self-respecting looking little creature, often of a polished chestnut hue, was very common on the pigeons. Bird-lice live by eating feathers, a very arid diet. There was also an immature specimen of *Psocus*, the so-called Lesser Death Watch, which seems to have found an appropriate home in the sacred edifice. Only one species of bug allied to the genus *Anthocoris* occurred. This belongs to a group which is numerous in species, chiefly found in woods and forests; but some live in ants' nests. Finally, there is the little "silver-fish" *Lepisma saccharina*, so common in disused cupboards and in the sugar barrels of our Italian warehousemen.

The list does not pretend to be exhaustive. Doubtless, other interesting creatures will turn up; already we hear news of another beetle. But a really substantial beginning has been made, and investigations already published on the animal ecology of our "chapel beyond compare," show that the fauna of the building is both "extensive and peculiar."

CHAPTER VIII

CHARLES DARWIN (1809-1882)[1]

NINETEEN HUNDRED AND NINE was the year of centenaries. Perhaps in no other year in History were so many men born destined to impress their genius on the Literature, the Politics, and the Science of the world as in 1809. The number of literary men who first saw the light in that "annus mirabilis" is almost too long to mention—Mark Lemon, the genial Editor and one of the founders of *Punch*, "Crimean" Kinglake, John Stuart Blackie, till lately a well-known figure in Edinburgh, Monckton Milnes, the first Lord Houghton, "poet, critic, legislator, the friend of authors." One could prolong the list, and one must at least mention the names of Louis Braille, the inventor of the Braille type for the blind, of Edgar Allan Poe, of Oliver Wendell Holmes, of Fanny Kemble, and of Elizabeth Barrett Browning, before passing on to remind you that 1909 is also the Centenary of Tennyson who, with Browning, formed the twin stars of poetry during the reign of Queen Victoria, and who, from his intimate knowledge of natural history and his keen power of observation, was essentially the Poet of Darwinism. Of his lifelong friend, born the same year, Edward Fitzgerald, the translator, one feels almost inclined to say author, of Omar Khayyâm, and of the gifted musician Mendelssohn, there is no time to speak.

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[1] Portions of this Lecture have been taken from my Address as President of the Zoological Section of the British Association, at the Winnipeg Meeting, 1909.

Three other names stand out. William Ewart Gladstone, that leader of men, a politician and a statesman capable more than most men at once of arousing the warmest affection of his followers and the bitterest hatred of those who went the other way. Cultured as he was and widely read, he had his limitations, and although his tenacious memory was stored with the humanities of all the ages, he was singularly devoid of any knowledge of Science. If we may paraphrase the words of Lord Morley in his estimate of Gladstone's writings we would say that his place is not in Science " nor in critical History but elsewhere."

Abraham Lincoln, the greatest man born on the American continent since the War of Independence, was some ten months older than Gladstone. Both men were great statesmen, both men were liberators; for we must not forget that in many minds the help Gladstone gave to Italy in her struggle for freedom and union remains the most enduring thing he achieved.

Yet in externals how different ! One the finished, cultured product of the most aristocratic of our public schools and the most ancient of our Universities, the other little read in the classics or in mediaeval and ecclesiastical lore, yet deeply versed in the knowledge of men and in the power to sway them. Rugged, a little rough if you like, humorous and yet sad, eminently capable, a strong man, and at heart "a very perfect gentleman."

On the same day, the 12th February, upon which Lincoln first saw the light, was born at The Mount, Shrewsbury, a little child destined as he grew up to alter our conceptions of organic life perhaps more profoundly than any other man has ever altered them, and this not only in the subjects he made his own but in every department of human knowledge and thought.

Being as I am a member of Charles Darwin's own College, recalling as I do the celebration in the summer of 1909 in which the whole world united to do his memory honour, it would seem meet that I should in the year of the centenary of his birth devote this address to a consideration of his life and of his work, and of such confirmation and modification of his theories as the work of the last fifty or sixty years has revealed.

As to the man I can but quote two estimates of his character, one by a College companion who lived on terms of close intimacy with Darwin when at Christ's, the other the considered judgment of one who knew and loved and fought for Darwin in later life.

Mr. Herbert says:

"It would be idle for me to speak of his vast intellectual powers . . . but I cannot end this cursory and rambling sketch without testifying, and I doubt not all his surviving College friends would concur with me, that he was the most genial, warm-hearted, generous, and affectionate of friends; that his sympathies were with all that was good and true; and that he had a cordial hatred for everything false, or vile, or cruel, or mean, or dishonourable. He was not only great, but pre-eminently good, and just, and lovable."

Professor Huxley, speaking of the name of Darwin, says:

"They think of him who bore it as a rare combination of genius, industry, and unswerving veracity, who earned his place among the most famous men of the age by sheer native power, in the teeth of a gale of popular prejudice, and uncheered by a sign of favour or appreciation from the official fountains of honour; as one who, in spite of an acute sensitiveness to praise and blame, and notwithstanding provocations which might have excused any outbreak, kept himself clear of all envy, hatred, malice, nor dealt otherwise than fairly and justly with the unfairness and injustice which was showered upon him; while, to the end of his days, he was ready to listen with patience and respect to the most insignificant of reasonable objectors."[1]

Although the Darwin family trace their ancestry to about the year 1500, we need not I think go further back than Erasmus (1731-1802), grandfather of Charles. This distinguished physician, the author of *The Loves of the Plants* and of *Zoonomia*, transmitted to his grandson his benevolent and sympathetic character and a remarkable charm of manner, as well as his great stature.

In many respects Erasmus Darwin was in advance of his times. He was for instance a great advocate of temperance, and Mr. Lucas has lately reminded us of his inhuman advice: "If you must drink wine let it be home-made," surely the shortest cut to total abstinence yet devised by the wit of man.

He wrote innumerable verses in the somewhat stilted style of the period. They were immensely admired by his contemporaries, and Cowper, who could have had little or no sympathy with most of

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[1] *Life and Letters of Charles Darwin*, vol. ii, 1887, p. 179.

Darwin's views, wrote in conjunction with Halley a poem in his honour which begins:

> " No envy mingles with our praise,
> Tho' could our hearts repine
> At any poet's happier lays,
> They would, they must, be thine."

The third son of Erasmus, Robert Waring Darwin, was the father of Charles. Like his father he was a physician, and for many years he enjoyed a large practice at Shrewsbury. He married Susannah, the daughter of his father's friend, Josiah Wedgwood, of the well-known pottery works at Etruria. The Mount, a large, red-brick, comfortable-looking, square house, was built by him about the year 1800, and here as I have said Charles Darwin was born.

In his charming and frank fragments of autobiography Darwin recalls many incidents of his own childhood. As a boy he early developed a taste for collecting plants, shells, minerals, and other natural objects, and he was at pains to learn their names. He tells a curious story of himself pretending that he could alter the colour of flowers by watering them with coloured fluids, curious because at his age boys are not as a rule interested in such problems of vegetable physiology. It is characteristic that in the earliest portrait of him, a charming crayon sketch in which his youngest sister Catherine also appears, he is depicted holding a pot of flowers in his hands. At the age of nine he was sent to the school at Shrewsbury, then in its picturesque old buildings in the town; he was a boarder there and thus had as he says " the great advantage of living the life of a true schoolboy." The school was but almost a mile from his father's house, and he used often to run home between roll-calls. He remained at school until he was sixteen, and then his father, thinking he was not doing much good, sent him to join his elder brother who was studying medicine at Edinburgh University. At this period, like his grandfather, his father, and his brother, Darwin was destined to study medicine, and he attended the medical course which consisted entirely of lectures, all of them with but one exception " intolerably dull." Apart from the lectures, which were evidently almost useless, Darwin acquired a good deal of miscellaneous information whilst at Edinburgh; he did much collecting along the shore, learnt the art of the bird-stuffer, frequented two or three Societies and doubtless, as is the habit of those of his age, took part in many and interminable discussions. He also became an ardent sportsman and was especially enthusiastic about shooting. Apparently, however, his heart was not in his medical work, and in 1827 his father proposed that he should become a clergyman and with this in view decided to send him to Cambridge.

The Admission Book at Christ's College, which in those days was very negligently kept, contains the following entry: " Admissi sunt in Collegium Christi a Festo Divi Michaelis 1827 ad Festum eiusdem 1828:

[No. 3.]
Octobris 15. Carolus Darwin admissus est pensionarius minor sub Mro Shaw."

Charles Darwin came into residence in the Lent Term of 1828, with a view of taking Holy Orders, and graduated in the Easter Term of 1831. The reason for his not joining the College in the usual month of October was that, although he had been educated at Shrewsbury, one of the best classical schools in England, during the two years he had spent at Edinburgh studying the preliminaries for the medical profession he found to his dismay that never having opened a classical book since he left school he " had actually forgotten, incredible as it may appear, almost everything which he had learnt, even to some few of the Greek letters, so that between October and Christmas he was with a private tutor at Shrewsbury." But as he records, " I soon recovered my school standard of knowledge, and could translate easy Greek books such as Homer and the Greek Testament, with moderate facility."

Charles Darwin probably came to Christ's College because his elder brother Erasmus was a student there. Erasmus in fact proceeded to the M.B. Degree in the year Charles Darwin came up. Why Christ's was chosen for this generation of Darwins does not seem clear. Their grandfather Erasmus, author of *The Loves of the Plants*, was at St. John's, a College closely connected with Shrewsbury, but at that period the life of an undergraduate at St. John's seems to have been a somewhat troubled one, whereas, to judge from the expressions of contemporaries of Charles Darwin, Christ's was in their day "a pleasant, fairly quiet College, with some tendency towards horsiness," although betting was not a regular practice. Many of the men made a custom of going to Newmarket during the races, in this they were by no means discouraged by the tutor, Mr. Shaw, who was himself generally to be seen on the Heath on these occasions. It is in the recollection of those now living that one of the College "gyps" used to recount how when young he had seen a number of students in scarlet coats ride round the first court. Mr. Shaw before his death had held every preferment which it was in the power of the

College to confer. At the age of sixty-four he was elected to the mastership; but the seclusion of the Lodge proved intolerable to one who for forty-two years had lived practically in the Combination Room, and he resigned in three weeks. Three years later he accepted the living at Kegworth, but was back in College within two months. He tried no further change, until he died in 1859, and after holding a Fellowship for fifty-two years, he was laid to rest in the ante-chapel. Shaw was evidently, as the manner of the times was, an easy-going tutor, and there is no indication that he or any of the other authorities did not get on perfectly well with the young naturalist.

Shaw gave up the tutorship in 1829 and was succeeded by John Graham, one of the most brilliant of the *alumni* of the College (fourth Wrangler and Chancellor's Classical Medallist in 1816), who was elected Master of the College in 1830, and was appointed to the Bishopric of Chester in 1848. Graham was one of the small band of Cambridge Liberals in the days of the first Reform Bill, and a strong supporter of the abolition of University tests. As a disciplinarian in College he is said to have been somewhat too easy-going, a fault which Darwin would probably be very ready to overlook.

Late in life men are apt to look back upon their College days with a somewhat exaggerated regret for lost opportunities, and Charles Darwin felt that at Cambridge his " time was wasted, as far as his academical studies were concerned, as completely as at Edinburgh and at school." But this must not be taken too literally. He seems to have passed his University examinations with ease, and a letter recording his joy at getting through the " Little-Go " shows that he at any rate took them seriously. In his third year he records that he worked with some earnestness for his final degree of B.A., brushing up his classics, algebra, and Euclid, which later gave him much pleasure as it had done at school.

In those days Paley's *Evidences of Christianity*, as well as his *Moral Philosophy*, were essentials for the B.A. Degree, and Darwin prepared the subject matter of these works in a very thorough manner. The logic of the *Evidences* gave him, he says:

> " as much delight as did Euclid. The careful study of these works, without attempting to learn any part by rote, was the only part of the academical course which, as I then felt, and as I still believe, was the least use to me in the education of my mind. I did not at that time trouble myself about Paley's premisses, and taking these on trust I was charmed and convinced by the long line of argumentation."

He passed the final examination with success, and indeed gained a good place amongst those who were candidates for the Ordinary Degree. In later years Darwin was not quite sure what place he had taken in his final examination, his memory fluctuating between fifth, tenth, and twelfth. As a matter of fact, a reference to the archives of the University shows that he was placed tenth in the *οἱ πολλοί*, a not undistinguished position out of a class list of 178 successful candidates. In that year the whole number of the Honours candidates was but 86.

Apparently Darwin's experiences at Edinburgh had given him a distaste for lectures, and it is unfortunate that this distaste kept him away from the teaching of Sedgwick. He attended, however, the botanical lectures of Henslow, which were then crowded with students as well as with senior members of the University, and he revelled in the excursions which Henslow used to conduct, on foot or in coaches, or down the river in barges, "or to some more distant place, as to Gamlingay, to see the wild lily of the valley and to catch on the heath the rare natterjack." He was in fact known to the senior members of the University as "the man who walks with Henslow," and the man who walked with Henslow did not spend three years at Cambridge wholly in vain.

On coming into residence Darwin kept for a couple of terms over the shop of Bacon the tobacconist—Calverley's Bacon—at that time in Sidney Street. For the rest of his time in Cambridge he had a pleasant panelled set of rooms—my "most snug and comfortable rooms," as he calls them—on the south side of the first court of Christ's, formerly occupied, according to tradition, by Paley, and since Darwin's time by the present Dean of Wells and successive College deans.

Darwin, as has been said, came up after Christmas. Among those of his contemporaries at Christ's, who had joined the previous October, was A. T. Holroyd, who, a few years later, in 1836, journeyed up the Nile and crossed the desert to Khartoum. He penetrated up the Blue Nile to Sennaar, and again across the desert to the White Nile and Kordofan. Later he explored the Syrian desert, and "Holroyd's tracks" were common on maps of the period. He afterwards went to New Zealand and Australia, where he practised at the Sydney bar. He was elected to Parliament in 1863, and became Minister of Works. Other contemporaries were Charles Davidson, a distinguished conveyancer, and G. H. Moore, a Roman Catholic, of Moore Hall, County Mayo, which county he represented in Parliament for many years. He was a leader with C. Gavan Duffy in the tenantright movement, and a distinguished and popular man. Amongst the men who came up two terms after Darwin was the Hon. M. A. Harris, son of Baron Harris of Seringapatam and Mysore, who for a time served in the East India Civil Service; the Reverend W. Fitzwilliam Wharton, Rector of Barningham, Yorkshire; William Aubrey de Vere Beauclerk, ninth Duke of St. Albans; and James Hildyard, one of six brothers who were all Fellows of various Colleges. The last-named was a sound scholar, and edited two plays of Plautus. He became Rector of Ingoldsby, and was the author of *Ingoldsby Letters*.

Amongst his friends was Whitley, Senior Wrangler in 1830, who inoculated him with a taste for pictures and good engravings, and Darwin records with pleasure his frequent visits to the "Fitzwilliam Gallery," and thinks that his taste for pictures and engravings must have been "fairly good; for I certainly admired the best pictures." His friend J. M. Herbert introduced him to a musical set, and, in spite of his want of ear, he acquired a strong taste for music, "and used very often to time his walks so as to hear on week-days the anthem at King's College Chapel." He says, "This gave me infinite pleasure, so that my backbone would sometimes shiver." Amongst other absorbing pursuits was that of collecting insects, especially beetles. He was first interested in entomology by his cousin W. Darwin Fox, of Christ's, who had kindred tastes, and with whom he frequently corresponded—in fact, most of the letters written from Christ's College that remain were addressed to him.

After he had passed his final examination Darwin had still to keep one term in order to proceed to his degree, which he received on 26th April 1831, and it was during this term and the subsequent May term when he was still in residence, that, unvexed by the prospect of examinations, Henslow persuaded him to begin the study of geology. There must have been something unusual about the student, for he seems to have made friends with men much older than himself, and some of them, one would imagine, not very approachable. He records how he used to walk home at night with Dr. Whewell; and rejoices in his friendship with Leonard Jenyns. He became the friend of Adam Sedgwick, and in August 1831 he accompanied him on a geological survey in North Wales. It was on returning from this trip that he found a letter from Henslow informing him that Captain Fitzroy was willing to give up part of his cabin to any young man who would volunteer without pay to act as naturalist on the classical voyage of the *Beagle*. Captain Fitzroy was going out to survey the southern coast of

Tierra del Fuego and to visit some of the South Sea Islands, returning by the Indian Archipelago.

We have seen how Darwin had been influenced by the works of Paley; and it is interesting to record that when, owing to the cramped space in a brig of ten guns, Darwin was restricted to a single volume of general reading he selected the writings of another great Christ's man, John Milton.

Captain Fitzroy, like Mrs. R. Wilfer, was a "disciple of Lavater," and took exception to the shape of Darwin's nose. "He doubted whether any one with my nose could possess sufficient energy and determination for the voyage." But on acquaintance his doubts soon vanished, and the captain and his naturalist became close friends.

I fear time hardly permits a detailed account of the voyage of the *Beagle*. As far as Darwin is concerned it took place at what is perhaps the period of life when the mind is most original. Many of the great creative ideas of thought seem to me to be engendered between the age of twenty and thirty years, and although much may be added later the foundation of man's life work is usually laid then. Darwin, as he records, "worked to the utmost during the voyage from the mere pleasure of investigation and from" his "strong desire to add a few facts to the great mass of facts in Natural Science."

He returned to England in October 1836 and two months later, on 13th December, Darwin settled again in Cambridge, but only for three months. He took lodgings in Fitzwilliam Street, in a house on the northern side, now bearing a tablet which records his residence, and spent his time in unpacking and distributing the collections which he had made on his South American voyage. He was apparently a good deal in College, and was evidently made a "Member of the Room," for his name occurs frequently in the Combination Room wine book. This book, which dates back to pre-Napoleonic times, is one of the few records the College retains of the presence of the great naturalist.

His relations to Christ's were always of the most cordial kind, and it has ever been a subject of regret to the governing body that their new statutes did not pass through Parliament in time for them to confer the only honour they could bestow upon Darwin, that of an honorary Fellowship.

Whatever feeling Darwin had about the education that he received at Cambridge he had a real love for the place, to which he sent all but one of his sons; and it is good to read the following lines in his autobiography: "Upon the whole, the three years I spent at Cambridge were the most joyful of my happy life."

Early in the year 1839 Darwin married his cousin Emma Wedgwood, and for nearly four years they kept house in Upper Gower Street. The sustained toil and the discomforts of the ship had injured Darwin's health, and he and his wife led a life of "extreme quietness." During this period, he states, "I did less scientific work, though I worked as hard as I possibly could, than during any other equal length of time in my life. This was owing to frequently recurring unwellness and to one long and serious illness." His health indeed prevented his regular attendance at scientific and other gatherings which are among the few attractions London can offer over the country, and in 1842 he removed to the secluded Kentish village of Down. The chief charm of the place was its quietness, "its chief merit," as Darwin writes, "is its extreme rurality." The house stands a quarter of a mile from the village, the peaceful charm of which has been but little altered in the last eighty years.

Here for forty years Darwin lived and laboured, in spite of ill-health which often laid him aside for weeks, his daily task always confined to a very few hours of work. I do not propose to follow further the details of this happy life, but one event, and that a well-known one, I must briefly refer to. Darwin's work was so catholic, its bulk so great, and its effect so stimulating, that few have realized how vast was the output of scientific work which, though often an invalid, he gave to the world. The extent of the work has been perhaps a little over-shadowed by the immense importance of that great generalization known as Natural Selection. Sir Wm. Thiselton-Dyer has reminded us that Darwin lies beside Newton in Westminster Abbey, and he adds: "It is the singular fortune of an illustrious University that of two of her sons, one should have introduced a rational order into the organic and the other into the inorganic world."

Last year was celebrated the Jubilee of the reading of a paper at the Linnean Society entitled: "On the Tendency of Species to form Varieties; and on the Perpetuation of Varieties and Species by Natural Means of Selection." This was the joint production of Charles Darwin and of Alfred Russell Wallace, and was laid before the Society by Sir Joseph Hooker and Sir Charles Lyell. The history of this paper is well known, but it is so creditable to both these high-minded and honourable men that I may briefly repeat it, and in doing so I cannot do better than use the noble words[1] of Wallace:

"The *one fact*," said Wallace, "that connects me with Darwin, and which, I am happy to say, has never been doubted, is that the idea of what is now termed 'natural selection' or 'survival of the fittest,' together with its far-reaching consequences, occurred to us *independently*, and was first jointly announced before this Society fifty years ago.

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[1] The Darwin-Wallace Celebration. The Linnean Society, London, 1908, pp. 5-7.

"But, what is often forgotten by the press and the public, is, that the idea occurred to Darwin in October 1838, nearly twenty years earlier than to myself (in February 1858); and that during the whole of that twenty years he had been laboriously collecting evidence from the vast mass of literature of Biology, of Horticulture, and of Agriculture; as well as himself carrying out ingenious experiments and original observations, the extent of which is indicated by the range of subjects discussed in his *Origin of Species*, and especially in that wonderful storehouse of knowledge—his *Animals and Plants under Domestication*, almost the whole materials for which works had been collected, and to a large extent systematized, during that twenty years.

"So far back as 1844, at a time when I had hardly thought of any serious study of nature, Darwin had written an outline of his views, which he communicated to his friends Sir Charles Lyell and Dr. (now Sir Joseph) Hooker. The former strongly urged him to publish an abstract of his theory as soon as possible, lest some other person might precede him—but he always refused till he had got together the whole of the materials for his intended great work. Then, at last, Lyell's prediction was fulfilled, and, without any apparent warning, my letter, with the enclosed Essay, came upon him, like a thunderbolt from a cloudless sky! This forced him to what he considered a premature publicity, and his two friends undertook to have our two papers read before this Society.

" How different from this long study and preparation—this philosophic caution—this determination not to make known his fruitful conception till he could back it up by overwhelming proofs—was my own conduct. The idea came to me, as it had come to Darwin, in a sudden flash of insight: it was thought out in a few hours—was written down with such a sketch of its various applications and developments as occurred to me at the moment,—then copied on thin letter-paper and sent off to Darwin—all within a week. *I* was then (as often since) the ' young man in a hurry ': *he*, the painstaking and patient student, seeking ever the full demonstration of the truth that he had discovered, rather than to achieve immediate personal fame."

It is a remarkable fact that both naturalists owed their inspiration to the same source. Both had read the *Essay on Population* written by a modest clergyman named Malthus, a book which on its appearance was met with a storm of execration; both saw in it the demonstration of that " struggle for existence " which surrounds us on all sides, and both (and they alone of all the readers of Malthus) saw that the necessary consequence of this struggle for existence was that the fittest alone survive. This conception, " an essentially new creative thought," as Helmholtz described it, explained the method of that evolution which since the time of the Greeks has been at the back of men's minds. It thus rendered the fact of evolution acceptable and even inevitable in the minds of all intelligent thinkers and brought about changes in our attitude to the organic world and indeed in our whole relation to life greater perhaps than have ever been produced by any previous thought of man.

It has been somewhat shallowly said, said in fact on the day of the centenary of Darwin's birth, that " we are upon very unsafe ground when we speculate upon the manner in which organic evolution has proceeded without knowing in the least what was the variable organic basis from which the whole process started." Such statements show a certain misconception, not confined to the layman, as to the scope and limitations of scientific theories in general, and to the theory of organic evolution in particular. The idea that it is fruitless to speculate about the evolution of species without determining the origin of life is based on an erroneous conception of the true nature of scientific thought and of the methods of scientific procedure. For Science, the world of natural phenomena is a complex of procedure going on in time, and the sole function of Natural Science is to construct systematic schemes forming conceptual descriptions of actually observed processes. Of ultimate origins Natural Science has no knowledge and can give no account. The question whether living matter is continuous or not with what we call non-living matter is certainly one to which an attempted answer falls within the scope of scientific method. If, however, the final answer should be in the affirmative we should then know that all matter is living, but we should be no nearer to the attainment of a notion of the origin of life. No body of scientific doctrine succeeds in describing in terms of laws of succession more than some limited set of stages of a natural process; the whole process—if indeed it can be regarded as a whole—must for ever be beyond the reach of scientific grasp. The earliest stage to which Science has succeeded in tracing back any part of a sequence of phenomena itself constitutes a new problem for Science and that without end. There is always an earlier stage and to an earliest we can never attain. The questions of origins concern the theologian, the metaphysician, perhaps the poet. The fact that Darwin did not concern himself with questions as to the origin of life nor with the apparent discontinuity between living and non-living matter in no way diminishes the value of his work. The broad philosophic mind of the great Master of inductive method saw too fully the nature of the task he had set before him to hamper himself with irrelevant views as to origins.

No well-instructed person imagines that Darwin spoke either the first or the last word about organic evolution. His ideas as to the precise mode of evolution may be, and are being, modified as time goes on. This is the fate of all scientific theories; none is stationary, none is final. The development of Science is a continuous process of evolution, like the world of phenomena itself. It has, however, some few landmarks which stand out exceptional and prominent. None of these is greater or will be more enduring in the history of thought than the theory associated with the name of Charles Darwin.

I cannot attempt further to weigh or estimate the influence and the far-reaching import of the work which all the world has been weighing and estimating during the Centenary of his birth, and the Jubilee of the *Origin of Species*. I cannot, to my intense regret, give you any personal recollections of Darwin, for though I think I once saw him in the streets of Cambridge, I have to my sorrow never been absolutely sure that this was so.

But in reading his writings and his son's most admirable Life one attains a very vivid impression of the man. One of his dominant characteristics was simplicity, simplicity and directness. In his style he was terse, but he managed to write so that even the most abstruse problems became clear to the public. The fascination of the story he had to tell was enhanced by the direct way in which he told it.

One more characteristic. Darwin's views excited at the time intense opposition and in many quarters intense hatred. They were criticized from every point of view and seldom has a writer been more violently attacked and abused. Now what seems to me so wonderful in Darwin was that—at any rate as far as we can know—he took both criticism and abuse with mild serenity. What he wanted to do was to find the truth, and he carefully considered any criticism, and if it helped him to his goal he thanked the critic and used his new facts. He never wasted time in replying to those who fulminated against him, he passed them by and went on with his search.

Charles Darwin (1809-1882)

It is a somewhat remarkable fact that whilst the works of Darwin stimulated an immense amount of research in Biology, this research did not at first take the line he himself had traced. With some exceptions the leading zoological work of the end of the last century took the form of embryology, morphology, and palaeontology; and such subjects as cell-lineage, "Entwickelungsmechanik"; the minute structure of protoplasm, life-histories, teratology, have occupied the minds of those who interest themselves in the problems of life. Along all these lines of research man has been seeking for the solution of that secret of nature which at the bottom of his heart he knows he will never find, and yet the pursuit of which is his one abiding interest. Had Frank Balfour lived we should, I think, have sooner returned to the broader lines of research as practised by Darwin, for it was Balfour's intention to turn himself to the physiology—using the term in its widest sense—of the lower animals. Towards the end of the nineteenth century, stimulated by Galton, Weldon began those series of measurements and observations which have culminated in the establishment under the guidance of his friend and fellow-worker, Karl Pearson, of a great school of Eugenics and Statistics in London. With the beginning of the twentieth century came the rediscovery of the neglected facts recorded by Gregoire Mendel, Abbot of Brünn, some years before, and with that rediscovery an immediate and enormous outburst of enthusiasm and of work. Mendel had placed a new instrument in the hand of the breeder, an instrument which, when he has learnt to use it, will give him a power over all domesticated animals and cultivated crops undreamt of before. We are getting a new insight into the workings of Heredity and we are acquiring a new conception of the individual. The few years which have elapsed since men's attention was redirected to the principles first enunciated by the Abbot of Brünn have seen a great School of Genetics arise at Cambridge under the stimulating energy of Bateson and Biffen, and an immense amount of work has also been done in France, Holland, Austria, and especially in the United States. As the work has advanced new ideas have arisen and earlier formed ideas have had to be abandoned; this must be so with every advancing Science.

To what extent Darwin's writings would have been modified had Mendel's work come into his hands we can never know. He carefully considered the question of mutation, or as they called it then, saltation, and as time went on, he attached less and less importance to these variations as factors in the origin of species. Ray Lankester has recently reminded us that Darwin's disciple and expounder Huxley "clung to a little heresy of his own as to the occurrence of evolution by saltatory variation," and there must have been frequent and prolonged discussion on the point. That "little heresy" has now become the orthodoxy of a number of eager and thoughtful workers who are at times rather aggressive in their attacks on the supporters of the old creed. "That mutations occur and exist is obvious to every one, but that they are of frequent occurrence under purely natural conditions is," Sir William Thiselton-Dyer thinks, "unsupported by evidence." So delicate is the adjustment between an organism and its natural surroundings that it seems likely that a sudden, large, and wide mutation would lead to the extinction of the mutating individual. As far as I can understand the matter in dispute, Darwin and his followers held that evolution had proceeded by small steps for which we may accept de Vries' term fluctuations, whilst the Mutationists hold that it has advanced by large ones, or mutations. But it is acknowledged that mutations are not all of the same magnitude, some, *e.g.*, albinism, brachydactyly in man, dwarf habit or glabrousness in plants, may be large, others, *e.g.*, certain differences in shade of colour or in size, are insignificant, and indeed Punnett has suggested that under the head of fluctuating variation we are dealing with two distinct phenomena. He holds that "some of the so-called fluctuations are in reality mutations, whilst others are due to environmental influence." He thinks the evidence that these latter are transmitted is slender, and later states that "Evolution takes place through the action of selection on these mutations. Where there are no mutations there can be no evolution." The disagreement about the way in which Evolution has proceeded has perhaps arisen from a misunderstanding as to the nature of the two kinds of variation described respectively as Mutations and Fluctuations. Mutations are variations arising in the germ-cells and due to causes of which we are wholly ignorant; fluctuations are variations arising in the body or "soma" owing to the action of external conditions. The former are undoubtedly inherited, the latter are very probably not. But since mutations (using the word in this sense) may be small and may *appear* similar in character to fluctuations, it is not always possible to separate the two things by inspection alone. The whole matter is well illustrated by the work of Johannsen on beans. He found that while the beans borne by any one plant vary largely in size, yet if a large and a small bean from the same plant are sown, the mean size and variability of the beans on the plants so produced will be the same. The differences in size are presumably due to differences of condition and are not inherited. But if two beans are sown, one from a plant with beans of large average size, and one from a bean of small average size, the bean plant whose parent had the high average will bear larger beans than the one from the parent with small average beans. The faculty of producing a high or low mean size is congenital, is a mutation in the sense used above, and is inherited. It is no doubt unfortunate that the word mutation has been used in several different senses, for it seems to have led to most regrettable confusion and misunderstanding.

As I have said, in such a year, and in my position, I ought perhaps to have devoted the whole of this address to the more philosophical side of our subject, but in truth I am no philosopher, and I can only say as Mr. Oliver Edwards, "an old fellow-collegian" of Dr. Johnson's, said to the "great lexicographer" when they met after nearly half a century of separation: "I have tried too in my time to be a philosopher; but I don't know how, cheerfulness was always breaking in."

CHAPTER IX

PROFESSOR NEWTON (1829-1907)

NEWTON WAS ADMITTED A MEMber of Magdalene College in the spring of 1848, the entry in the admission book running as follows:

"Maii 30, 1848

"Alfred Newton, filius Gulielmi Newton de Eldon Hall in comitatu Norfolkiensi, armigeri, et uxoris ejus Elizae Milnes privatim institutus, annos natus XIX admissus est Pensionarius

Tutoribus { Edv. Warter.
V. Raven."

His name appears for the first time in the Calendar for 1849, and he apparently came into residence in the October Term of the previous year. Altogether there were about sixty students residing at Magdalene at that time, including four sizars, and two "Ten-year men," a class of student which is now as extinct as the dodo. They were usually, but not always, country clergy, who by keeping one term in each of ten years and passing the necessary examinations obtained a degree.

The Cambridge he came up to was very different from the Cambridge of to-day. It is even possible that he arrived on a coach or in a post-chay, for the railway line to Norfolk was only opened three years before, and the unlovely station which stands to-day much as it stood seventy years ago, was only built in 1845. At first it was provided with the usual two platforms, and no one seems now to know why one of these was done away with, and the platform so elongated that passengers perform a perceptible part of their journey on foot.

Still in those days people were easily pleased, and the author of the *Pictorial Guide to Cambridge* (1867), after referring to coaching as a still extant but semi-barbarous mode of transit, breaks into the following rhapsody over our railway station:

"The progress of the train has ceased, the rebounding of the carriages coming to a state of rest is over, the voices of porters and the opening of doors has commenced, and here we are standing on the pavement of the Cambridge station. What a surprise! I had no idea of such a length of building, all covered over, and comfortable; it cannot be much less than four hundred feet. This is really one of the best stations I have seen for many a day. But how is it the stream of passengers is dividing? Oh, I see, one half are taking themselves off to that handsome refreshment room, and the other half are passing through the building to trudge on foot into the town, or to indulge themselves with a cheap ride to the same place."

When Newton came into residence the Master of Magdalene was the Hon. and Very Reverend George Neville Grenville, Dean of Windsor, who had been appointed in 1813. He and his successor, the Hon. and Rev. Latimer Neville, later Lord Braybrooke, presided over the College for ninety-one years. The Tutors were E. Warter and V. Raven, and Mynors Bright, a well-known authority on *Pepys' Diary*, was Lecturer in Classics, Dean and Praelector. At that time there were but four Foundation Fellows in the College, but there were no less than thirteen "bye" Fellowships, though three of these were vacant in 1849. The bye-Fellows all received some small emolument from one or other of eight separate Foundations, which were consolidated under the statutes of 1882, when the emoluments of these Foundations were merged in the general funds of the College. As was the habit of the times, nearly all the Fellows were in holy orders and some of them non-resident.

There is little record of Newton as an undergraduate, but there is at least one significant fact. He was at that time notable for his English Essays, and I believe won a College prize in this subject. It is sometimes said that men of science cannot write English. I don't believe it. Certainly they can and do write better English than literary men write Science. But in any case, Newton was a master of words; they never dominated him. He used few, mostly Anglo-Saxon words, but he used them with an expert's sense of their meaning. In this, as in other aspects of his work, he showed a quite peculiar sense of the just and the fitting.

Whilst an undergraduate at Magdalene, Newton occupied the rooms which later were made fireproof and now house the Pepysian Library. He was never in the technical sense a scholar of the College, in fact, he took a " Poll degree," but after taking his degree the College Order-book of 1854 records:

" Ego Alfred Newton admissus fui in sodalitium hujus Collegii pro Magistro Drury."

This was a Fellowship known as the " Norfolk travelling Fellowship," and restricted to those whose fathers belonged to the county of Norfolk; but the holder was not a Foundation Fellow.

Newton's father's estate was at Elveden, which subsequently belonged to Prince Dhuleep Singh, whose son was also at Magdalene. It is now in the possession of Lord Iveagh. Although the word is written Elvedon, or Elveden, it was always called " Eldon," and it will have been noticed in Newton's entrance form that the family's place was so written.

The estate, which was remarkable for its shooting, lay in Suffolk, but a very small portion of it crosses the boundary into Norfolk, and it was this small portion that enabled Newton to claim being a Norfolk man and to acquire the Norfolk Travelling Fellowship. Newton's father was also a Norfolk J.P., and that may have helped. The funds at the disposal of the Norfolk Fellow were later merged in the general funds of the College. It was only in 1877, when he had held the Professorship of Zoology and Comparative Anatomy for eleven years, that he became a Foundation Fellow.

The town to which Newton came up in his nineteenth year was much smaller than to-day. The population in 1851 was 27,815; to-day, with the extensions of the town boundaries which have taken place since the beginning of this century, it has more than doubled in size. The University also has greatly increased in numbers. In 1849 there were 1,775 undergraduates, 3,786 members of the Senate, and 6,906 members of the University "on the Boards." These numbers had grown by November 1920 to 4,776, 7,780, and 15,862 respectively. The distribution of the students, too, has altered; in those days Pembroke had but 23 undergraduates all told, Magdalene just over 50.

The appearance of the town was almost mediaeval. There were but few houses—barely a dozen—south of Parker's Piece; Romsey Town, New Chesterton, and Newnham hardly existed; and to the north the " handsome and commodious shirehouse " opened in 1842 almost coincided with the limits of the borough along the Huntingdon Road. To make way for this Court of Justice the last relic of the Castle, a massive and spacious gate-house, was removed. The older buildings of the Observatory looked then much as they look now, but the married Don was then unthought-of, and the innumerable red-brick villas which stretch yearly farther towards the setting sun, between the Madingley and the Barton Roads, were undreamt of. There was no Selwyn, no Ridley Hall, no Girton, no Newnham, no Westminster or Cheshunt Colleges, and no Clergy-Training School; also there was no New Theatre.

The Fitzwilliam Museum stood unfinished with the then much smaller Addenbrooke's Hospital almost opposite. The Fitzwilliam art collections, which had been housed in the old Perse School in Free School Lane, were still being exhibited in 1848 in the east room of the University Library. The old College buildings still stood at Pembroke, and small houses occupied the site of the existing College buildings now facing Trumpington Street to the south of the Chapel. Waterhouse's "structures" were not built until the early 'seventies, and Scott's beautiful court in Pembroke Street not until 1883. In the middle of the last century people apparently preferred privacy, and where we now have open railings they had walls. There was a wall in front of Peterhouse and another shut off the little garden near the east end of Trinity Chapel; a third wall enclosed the graveyard of St. Andrew's Church, and another had but recently hidden the Round Church. The new buildings of the Pitt Press had been opened in 1833 and the old Lodge and neighbouring buildings which clung round the east end of King's Chapel had been by this time removed, but houses still clustered round the east end of St. Edward's Church and Great St. Mary's, and, indeed, the greater part of Market Hill was cumbered with buildings. The market was then held in an L-shaped space along the east and the southern side, and the old conduit which now stands at the corner of the Lensfield and Trumpington Roads stood at the west end of the southern limb. The greater part of the marketing in those days was done on Peas Hill, at that time a more spacious area than the L-shaped market-place, and Cambridge is one of the few towns left where the weekly market is still a feature in the life of the citizens. The year after Newton came up a providential fire destroyed some of those houses clustering around the east end of St. Mary's, and the opportunity was taken to remove the others.

The heavy gallery which occupied the whole width and some half of the depth of the chancel of Great St. Mary's remained almost until Newton became Professor. Here the Heads of Houses and the Doctors listened to, or rather slept through, the University sermon in great state, the Vice-Chancellor sitting on a throne in the centre of the front row. The University Library then sheltered on the west side "the Philosophy School," on the north the Divinity School, on the south "the School for Civil Law and Physic," and on the east a room where the Norrisian and other Professors of Divinity lectured. The Registry where the Registrary then carried on his business adjoined the Divinity School. All these rooms now happily form part of the Library, the heart of the University. Gonville and Caius College then presented a more modest and chastened front to the world than it does now, but was, about this time, considering plans for the existing Hall and Combination Room, and towards the end of the 'sixties Waterhouse's buildings were erected, replacing amongst other things the Theatre Coffee House and the original business house of the publishing firm of Macmillan. All Saints' Church, once known as Allhallows-in-the-Jewry, stood over against Trinity, with its tower projecting over the narrow footpath and pierced by the " side-walk." The Selwyn Divinity Schools and the Literary Schools did not then exist in St. John's Street, but on the other side of the road to the Pensionary, which stood where now they stand, was a curious congeries of buildings known as the Labyrinth, a relic of the Hospital founded about 1200 by a burgess of Cambridge, John Frost. Here in dark and ill-arranged rooms lived a number of the more evangelical students, " Simeonites " as they were then called. These students and their dwellings are vividly described by Samuel Butler in his novel, *The Way of All Flesh*. The Labyrinth occupied part of the area now covered by Scott's Chapel at St. John's. The old chapel stood till 1869 and the Master's Lodge then occupied the north end of the Hall and the north side of the second court. The new Lodge near to Magdalene College was only erected in 1863, and in Newton's student-days a lane known as St. John's Lane ran from St. John's Street along the north side of the College to a small hythe which abutted on the river, close to the west end of the Library of St. John's.

Holy Sepulchre had recently been " restored " by the Cambridge Camden Society, to the despair of all later archaeologists, and the opportunity was probably then taken of removing the wall which, as an old print shows, shielded the Round Church from the vulgar gaze. A little way beyond Newton's College stood in his student-days the old Church of St. Giles. "It is not improbable that this is the parent parish of Cambridge," writes Mr. T. D. Atkinson. We must never forget that the town of Cambridge in origin was over the river, although the only "transpontine" College—as a late Master of Trinity designated Magdalene—was that to which Newton belonged. St. Giles, even after being restored by the ingenious Professor Farish, also of Magdalene College, retained many features of interest, and it is a great pity that it was destroyed when the present plain, one might even say ugly, edifice was erected in 1875.

The College which Newton joined in 1849 was somewhat different from the Magdalene of to-day. A year or two before his "coming up," the *Cambridge Guide* describes the outer of its two courts as "very neatly stuccoed and sashed—and from the walls having been lately surmounted by an open parapet the whole presents an air of great neatness and elegance." "The chapel is about 50 feet long, 18 broad; it is fitted up in an exceedingly neat and pleasing manner, and has a curious

Altar-piece of plaster of Paris representing the two Marys at the Sepulchre after the Resurrection, in alto-relievo, by the ingenious Mr. Collins." The words " neat " and " neatness " were overworked words in the middle of the last century and probably felt correspondingly tired.

But to return to the chapel; towards the end of the seventeenth century the space in the roof had been floored in to make an upper chamber in which the College Library was then placed, but about the time of Newton's arrival at Magdalene this upper story was removed, and the chapel was heightened and, by adding to it part of the Master's old Lodge, lengthened. These " lodgings " had occupied the area now covered by the College Library, with an outer staircase and a northern wing, both of which disappeared when the present Lodge to the north of the College was built in 1835.

The restoration of the chapel began in 1847 and lasted over a period of four or five years. During this time all the " incongruities were swept away and the chapel skilfully and beautifully restored to its original Gothic character; the fine, high-pitched timber roof of the fifteenth century was once more restored to view; the entire building fitted up with richly carved and appropriate wood-work; the east window opened and with two side windows filled with painted glass." To those of us who only knew the Professor as a living and teaching zoologist it came as a surprise when we learned that he had painted one of the figures of these windows. He himself never alluded to it.

On the southern slope of Magdalene towards the river is now an open garden, with a parapet and water-gate—which no one ever seems to use—flanked at the eastern end by the new buildings of the kitchen and by a comely set of students' quarters. These last buildings Newton never saw. This garden and the new buildings occupy a site bought in part from Jesus College in 1790 and in part from the town in the following year. When Newton came up, and for a quarter of a century afterwards, this site was covered by a congestion of small tenements, those abutting on the river-side being for the most part small ale-houses. In the middle of the last century much of the food and the wood and reeds used for firing came into Cambridge " up the Cam," and numerous small " hythes " such as we can still see to-day between the Magdalene Bridge and the northern side of St. John's College were then conspicuous along the upper reaches of the Cam, between Magdalene and St. John's and above Queens', where the great mills were, and although for the most part put out of action, still are. The towing horses of the barges were cast off after passing Midsummer Common, and then the barges were punted along the backs of the colleges by stout poles called "spreads." In those days the bargee was a social feature in the University, as readers of Thackeray's *Codlingsby* will recall.

In Mr. T. D. Atkinson's plan of Magdalene the houses huddled on this narrow site were separated from the College by a narrow pathway known as Salmon's Lane, but one of Newton's colleagues has told me that Newton used to say there were two lanes running parallel with the river and two rows of tenements between them; after all, it is difficult to be incredulous about the overcrowding of small tenements sixty-five years ago, but one outstanding fact is that the corner house nearest to the bridge was a more substantial building and sheltered a well-known doctor of the town.

Newton came of a country-gentry stock. The family fortune was based on the West Indies, and it suffered the general decline which accompanied the abolition of slavery. His brothers, as brothers in county families in those days did, went their several ways into the various professions. Alfred Newton himself was destined for the Church; there was, I believe, a family living, and I well remember on one sunny August afternoon in his later years as he and I went together on a drive over the chalk hills between Cherry Hinton and the Hills Road, his telling me this, and adding that " the nearer he got to orders the less he liked the look of them." Not that he was not always a Christian and a genuinely religious man, but he had his views, and Newton when he had his views never varied them or abated one iota of them. On the whole, I am inclined to think that it made for peace in the Established Church when Newton decided not to take holy orders.

When I came up to Cambridge in 1880, a shy undergraduate, who had spent one year at St. Bartholomew's Hospital, where with the help of Stephen Paget I had dissected the leg of the wife of the butler[1] of the first Napoleon, I and my contemporaries fell under the glamour of Morphology. We were not so very far off from the *Origin of Species*, and we were even contemporaneous with Darwin's later works, all of which dealt with living creatures, living organisms, and yet our obsession was with the dead, with bodies beautifully preserved and cut into the most refined slices, stained in various pigments so that like the king's daughter of the psalmist they were " all glorious within." Professor Adami, the distinguished pathologist and now Vice-Chancellor of Liverpool University, and I spent our afternoons during half a term in cutting into thin slices a small *Amphioxus*—there was no automatic microtome then, and each section had to be mounted on a separate slide—when really we would have been better employed on the river or on the football-field. It was a curious, and to me a still unexplained, result of Darwin's teaching that the younger men who—at a very great distance—followed his footsteps, followed them not in a direct line but at an angle, a morphological, an embryological, and an histological angle, an angle which, to use again an Americanism, anyway pointed more to the dead than the living. Professor Francis Balfour was about this time finishing his epoch-making work on Comparative Embryology. He was in a way the founder of a new science, and without doubt was the most attractive man I have ever met. He had to a peculiar degree that elusive and indefinable quality, charm, and he charmed us all. Educated humanity is ever turning this way and that, trying to explore the unknown, to read the riddle of our being. It will never be solved, and were it, what would be left? In the early 'eighties comparative embryology seemed the most likely means of reaching some solution of this eternal problem, and in a minor way, under Balfour and his lieutenant Adam Sedgwick, we all became comparative embryologists.

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[1] He was an old soldier who had served in this capacity to Napoleon I at Longwood and in his old age had married a young wife, who through misfortune died in the Hospital. No one claiming the body, it was dissected.

Newton, however, had but little interest in such subjects; not that he opposed them in any way; indeed, he promoted them by his personal influence and by lending his demonstrator to the acting Head of the Morphological Laboratory. Although in some respects old-fashioned and with fixed ideas, he was like Mr. Crisparkle's mother, " always open to discussion," but he invariably looked, as the China shepherdess looked, as though he would like to see the discussion that would change *his* mind.

Yet he *was* open to argument, and without professing to study or to care much about the newer aspects of his subjects, he invariably helped them forward. It is characteristic of his liberality of thought that when some years before his death he nominated a deputy to give his formal lectures, he chose William Bateson, one of the earliest prophets of Mendelism, a subject the Professor was uninterested in and probably mistrusted. He was, in fact, a mid-Victorian zoologist, very painstaking, quite unusually accurate, old-fashioned in some ways, but we must never forget that he was one of the first of the zoologists of repute to accept and champion the views of Charles Darwin.

When I was a student his two courses of lectures were on Darwinism and on the Geographical Distribution of Animals. I don't think Newton liked lecturing. In the affairs of ordinary life he did not seem shy, but he did seem shy about lecturing. To begin with, he chose the uncomfortable hour of 1 p.m. I once also had to lecture for two or three years at that unhappy hour, and meeting at some social function a Girton lady who came to hear me, I apologized to her for frequently stopping before 2 p.m. on the ground of hunger. "Oh," she said, "*we* had always assumed that you'd lunched," and she seemed to think her and the other ladies' assumption as satisfactory to me as a mutton chop.

Newton's lectures were desperately dry and very formal. The Professor sat before a reading desk and read every word of the discourse from a written manuscript, written in his minute hand with a broad quill, so that all the letters looked the same, like the Burmese script. At long intervals there was drawn the outline of a tumbler, like the wine-glasses which used to indicate in the foreign "Bradshaws" those railway stations which boasted of the existence of refreshment-rooms. Whenever the Professor came to these outlines he religiously took a sip of water. Whether it was the time of day or whether it was that we students were all absorbed in Comparative Embryology and in Morphology, the attendance was always small. I went during my second and third year, and at times was the sole auditor. Not that that made the least difference to the Professor. He steadily and relentlessly read on—" the majority of you now present know," " most of my audience are well aware," and similar phrases left me in considerable doubt as to what parts of me were " the majority " and which the " most."

Where the Professor excelled was in informal talks in his room after lecture or in his home in the Old Lodge at Magdalene College. He was a zoologist, not a necrologist. As far as his lameness had permitted he had always been an open-air man. Owing to the vastness of the subject, every student of zoology must have a special, favourite group of animals, and Newton cared most about birds. But he was no " mere ornithologist," as his unsuccessful opponent at the election to the professorship described him in 1866. His shilling textbook, *Zoology*, one of the Manuals of Elementary Science, published by the Society for the Promotion of Christian Knowledge, is a model of its kind, and undoubtedly should be better known, for in clear and clean-cut English it covered practically every branch of zoology, and to the younger student presented an ordered framework upon which he could hang his scattered and isolated, but none the less real, items of knowledge.

Newton's Sunday evenings were great institutions in the life of all of us who cared about biological science forty odd years ago and onwards till his death. They began in a small way; when the Professor first became a Professor in 1866 the number of those who passed the Natural Science Tripos was but nine, the year Newton died the numbers were, in Part I, 147, and in Part II, 36. One of his best friends, one who "came up" about the time Newton was elected to the Chair of Zoology and Comparative Anatomy, and who in those remote days frequented the Sunday evenings at Magdalene College, told me that when his younger brother came up a few years later he sent by his hand a brace of partridges. The freshman knocked at the door, and entering the room, faced the back of the Professor, and after an almost audible pause, said, "Please sir, I've brought you some birds." "Skins or skeletons," flashed back the ornithologist, always more occupied in ornithology than in gastronomy. Not that Newton did not value a good dinner. He breakfasted a little late but very heartily, and he always filled two enormous cups with tea; one he drank, the other he reserved and sipped during the morning over his work. He rather despised those who ate lunch —a biscuit and a glass of sherry buoyed him up for his one o'clock lecture—but he enjoyed his dinner. One curious custom he had, he always watered his wine; he used to request a carafe to be placed near him and poured a little water into each glass of wine, though if I recollect aright he spared the port.

On Sunday evenings after a glass, or perhaps two, of port, and a couple of exiguous Russian cigarettes in the Combination Room, the Professor used to retire and change into some loosely fitting garments. He invariably wore mittens. Twenty minutes later those who were privileged to dine with him in Hall went through the garden entrance, and so into the inner room, where we found him seated in an armchair just within the doors. The room was plainly but comfortably furnished in the mode of the Victorian period; the fire was very hot, the guests were seated in a large circle of chairs, something like the Christy Minstrels of our boyish days; and yet in spite of these obvious disadvantages Newton's Sunday evenings saved Zoology as the science of living animals in Cambridge. Often there were awkward pauses, but the Professor sat through them all, making paper spills out of old letters, and smoking pipe after pipe. To him the little

Russian cigarettes were merely *hors d'œuvres*, the real business was tobacco in a pipe, and he held very strong views about pipe racks. The bowl of the pipe must be supported so as to be lower than the stem, and the numerous racks that supported his innumerable pipes exemplified this principle. These Sunday evenings were a little formal and a little dull, we were all a little afraid of the Professor and much more afraid of ourselves. Sitting in that semicircle of seats it was difficult if not impossible to break up into groups, and yet those Sunday evenings and some others which I attended in Oscar Browning's rooms at King's and in Vines's at my own College helped me more than I can say. He was, in the real and the best sense, a man of the world, and hence he was able to help us and did help us in many ways, not in the least zoological.

Newton disliked all innovations, and when in 1881 the trams were introduced into the town he showed his disapproval in the following manner. He used to walk down to his lectures at the Museum in his light tussore silk gown, shepherd's plaid trousers, and a very imposing top hat, very high like that of Mr. Smallweed junior, and with a flat brim—he always wore a top hat with his gown—from Magdalene as far as the corner, then occupied by Macmillan and Bowes. There he picked up the tramlines and between these he walked in the middle of the road as far as Bene't Street, into which he then turned; and so majestic was his appearance, and so terrifying his aspect, that no matter how many people were trying to catch a train, the driver of the horse tram never ventured to overtake him.

In politics and in daily life Newton was a Conservative, even a Tory. He took little part in party affairs, having more important things to trouble about, but he resented and opposed any change in "the trivial round, the common task." Alterations in the College dinner, the introduction of an organ into the chapel, the presence of ladies at divine service, all met with his disapproval and his dissent, and neither were silent. Newton held that the College Chapel was no fit place for ladies. The matter reached an acute crisis many years ago when the proposal was made that the daughter of the tutor should be married in the Chapel at Magdalene.

This was to Newton a quite intolerable proposal. The Society was bitterly divided and affairs were becoming really critical when the young lady accidentally injured her leg and the wedding could not take place in the sacred edifice. Newton grimly remarked "*Solvitur non ambulando*," and with that the question closed.

For many years he presided as the first Chairman of the Board of Biology and Geology constituted under the statutes of 1881. He was a just and equable chairman, better, indeed, in the chair than out of it, but he never approved of the existence of the body he presided over, and nothing would induce him to vote either for or against so new-fangled an idea as a Doctor of Science. His conservative caution spread at times to his writings. We have seen that he was able and even willing to accept new ideas and to teach them, when he had by careful thought arrived at the conviction that they were sound; still in his *magnum opus*, the *Dictionary of Birds*, he preferred an alphabetical arrangement of his material rather than commit himself to any of the existing schemes of classification. None of these seemed to him satisfactory, and of course no system of classification of natural objects ever can be.

Here I may perhaps add a few lines I wrote about Newton very shortly after his death, when my memory of him, never to be dulled, was, perhaps, a little sharper than now.

The Museum of Zoology in Cambridge, which has grown to be one of the largest in the kingdom, attained its position largely under his guidance. He was always on the look out for new and valuable specimens, constantly, though anonymously, buying and presenting these. He very greatly disliked any of his donations to be recorded in the Reports of the Museums and Lecture Rooms Syndicate. His gifts, not only of specimens, but of books to the Library of the Department, must have cost a very large sum. His interest in old books and early editions was that of a scholar. He spent much time and knowledge on the University Library, but his special province was the Philosophical Library, situated in the heart of the Museums, over whose destiny he presided for many years. It is largely due to him that the Library at the present time takes in some 600 periodicals, and nothing gave him greater satisfaction than when, by the careful study of booksellers' lists, he was able to complete a "broken set." There was something peculiarly scholarly about Newton's writings; and in small matters of grammar and punctuation he was punctilious in a way that is now becoming rare. Very little that he published was of an ephemeral nature, and his printed word is characterized by great width of knowledge, untiring research, and an unusual degree of accuracy. In trying to sum up Newton's character one's "mind naturally reverts," as Mrs. R. Wilfer said, to Dickens' description of Sir Leicester Dedlock, "He is a gentleman of strict conscience, disdainful of all littleness and meanness, and ready at the shortest notice to die any death you may please to mention rather than give occasion for the least impeachment of his integrity. He is an honourable, obstinate, truthful, high-spirited . . . man." I have left out the words "intensely prejudiced, perfectly unreasonable," because although at times Newton was prejudiced and was unreasonable, the adjectives Dickens used go beyond my estimate of these traits in his character.

Once more to quote what I wrote soon after his death:

When once you were a friend of Newton's, you were always his friend. He was possessed of the old-fashioned courtesy of manner, and a certain leisureliness of habit, which made a visitor feel that he was not trespassing on the time of his host. Both in appearance and in character he had the finest attributes of the old race of English country gentlemen, to which by birth he belonged.

CHAPTER X

JOHN WILLIS CLARK (1833-1910)

I WANT TO TRY TO DRAW A PICTURE of J. W. Clark, the late Registrary, known to his friends at one time as "J. W." and later as "J.," as he presents himself to me when I look back over the thirty years of our close friendship.

The first time I met J. was about the middle of the Michaelmas term, in my first year, 1881. At that time I was attending Michael Foster's lectures, then perhaps at their best, and at their best they were unsurpassed. Whether it was because J. was Secretary of the Museums and Lecture Rooms Syndicate, or whether it was because he was a close friend of Foster's, he used to collect the Physiological Laboratory fees. This was an act of pure kindness on his part, yet we undergraduates all firmly believed that he used to have the odd shillings out of the guineas, as his commission! One day between noon and one I knocked at the door of his room, on the ground floor facing south, which was then used by the Museums and Lecture Rooms Syndicate, and, entering, faced an extremely well-dressed undergraduate who was just being told by J. in no uncertain voice that he didn't care a damn whether he came from Magdalene or whether he came from Hell, but that he would have to pay one pound eleven shillings and sixpence before he passed that door. The undergraduate paid and passed the door. I was very frightened. And then with that sudden change which all who knew him muſt have seen repeatedly, his temper in a moment melted away. He asked me all about myself, and by the time my fees were paid and very precisely entered in a book, I had been invited to visit him "any Sunday evening after dinner, and mind you come some Sunday soon."

Greatly daring, a week or two later I called, between nine and ten, one Sunday evening in November, at No. 1 Scroope Terrace. The parlour-maid said Mr. Clark was dining at Scroope House, and led me through a slip of a garden, through a door now walled up, through a lot of tall shrubs, to the door of a great house brilliantly lighted, and in a minute I was ushered into a ſtately dining-room full of gueſts juſt finishing their dessert, not one of whom I knew. I was the only one without a "wedding garment" and again I was frightened, and again I was made happy and at ease by the kindly tact of our hoſt and by the genuine friendliness and intereſt that Mrs. J. showed in me from the firſt moment I met her. That Sunday evening I found a second home, a home in Cambridge, where for thirty years I could and did turn for help and infallibly receive it.

J. was fond of entertaining his friends, and during the greater part of his married life kept almost open house, but he never cared for large formal dinner parties—"droves" as he called them. He liked a good dinner, though he had strong views as to food, and could not abide what he called "the charred limb of a ruminant," but he considered that good food took a very second place to good wine. He kept an excellent cellar, and when he entertained anyone whom he considered worthy of his best claret, great were the preparations made beforehand. The wine was got up in good time and stood on the chimney-piece or near to the fire to be warmed, and was carefully decanted just before dinner. Sometimes it was found to be over-heated, and then there was much tribulation. On one occasion, when a great connoisseur was staying at Scroope House, this accident occurred, and J. was so distressed that he implored his guest to superintend the warming operation himself on the following night. He was somewhat consoled and his guest considerably disconcerted to find, when the wine was decanted, that it had been over-heated again! That he rarely smoked was possibly due to the fact that tobacco and claret will not go together; and, though he provided tobacco for his friends, woe betide anyone who began to smoke before the bottle was finished.

"Finishing the bottle" was a point on which J. was very firm. When the decanter had circulated for the last time, he would (if there was still some wine in it) rise from his chair and walk round the table pouring wine into his guests' glasses until he had emptied it. He had specially tall, funnel-shaped glasses for the after-dinner claret, and he never allowed them to be filled more than three parts full, lest the bouquet of the claret should be lost. He sometimes, however, broke his own rule by filling a friend's glass to the brim, in his anxiety to see him "finish the bottle."

J. and his particular friends used from time to time to dine together at what they called "Harmonies in Bordeaux," when no wine except that grown in the Bordeaux district was drunk. Mr. Henry Bradshaw, Mr. Gerald Balfour, Mr. Alfred Cole, Mr. George Prothero, and Mr. J. N. Langley were usually among J.'s guests on these occasions. One of the "harmonies" has fortunately been preserved, and here it is:

Fourceaud	1858
Haut-Brion	1874
Listrac	1865
Léoville	1870
St. Pierre	1874
Barton Léoville	1864

15th August 1885.

It would be a mistake, however, to suppose that J. was anything but always abstemious both in what he ate and what he drank. He drank wine because he liked it; but, when in the early 'nineties he thought it had (to use his own words) ceased to like *him*, he at once gave it up of his own accord and rather against the wishes of his doctors. Subsequently, though he had throughout his life a horror of excess, he was always careful to explain that this abstention from wine was due to no teetotal principles, and that he was as anxious to entertain his friends and watch them enjoy his claret as he had been in what he used whimsically to call his " drinking days."

J. was absolutely unmusical, and it was literally true of him that he was only conscious of the National Anthem being played by seeing the people stand up. He would remark when questioned on the subject that he did not mind music more than any other noise. Yet he sat with pleasure through Wagner's *Ring*, and at one time used to go regularly to the Handel Festival. His dramatic instincts on these occasions made up for his lack of musical sense. It was no doubt on this account that in 1890 he was asked to join the Committee which organized a performance of Gluck's *Orpheus* in the Cambridge Theatre. It is said that he was recommended by Professor (now Sir C. V.)

Stanford in these words: " You'll see how J. will mount Hell! "

In his dress J. combined a certain measure of the fashions of an older generation with an unconventionality all his own, and it was characteristic of his strenuous nature that he always dressed at top-speed. I do not suppose he ever took more than a quarter of an hour in getting up in the morning. He wore as a workaday costume a double-breasted morning-coat, with waistcoat and trousers to match of some dark, usually heather-coloured tweed, but no one ever saw the coat buttoned. He also wore elastic-sided boots—in my time rapidly becoming extinct—and as a rule a shocking bad hat of the bowler type. He had a surprisingly springy gait, lifting himself on his toes at each step, a way of walking which was perhaps equalled but not surpassed in sprightliness by Mr. Gladstone.

On the other hand, he was adamant on the subject of evening dress. Even when spending the night at some remote French country inn, hardly ever to my knowledge—and I travelled much in France with him—did he appear at dinner without changing into evening dress. At University functions, clothed in a flowing silk gown, with his picturesque white hair and beard, both worn rather long, he was indeed a noticeable figure, and I trust that I shall hurt no one's feelings when I use a phrase he would himself have enjoyed, and say " that he played most of them off the stage."

His unconventionality was part of his energy, part of his wish to have something done and go on to do something else. Yet it was only in the last years of his life that he could bring himself to dictate to a shorthand clerk, and he never would tolerate a typewriter. If he wanted anything carried the way he was going, it seemed to him that the best and quickest way was to carry it himself. I once met him about midday walking along the King's Parade carrying a large chandelier hung about and sparkling with cut-glass prisms. It must have been rather a feat of strength, but to him at least the proceeding did not seem unusual. If he wanted a thing done he did it, and as Registrary he would take off his coat and tack up a placard or straighten a carpet in a way which would I fear have shocked his predecessors in that office. But with all this he had a great respect for the position he held. He resented and opposed any suggested changes in the status of the Registrary, and rebuked, in a way that left a doleful echo in the ear of the offender, any student who entered the Registry incorrectly attired, or who in any other way showed an inadequate appreciation of University etiquette.

As Secretary to the Museums and Lecture Rooms Syndicate he took his work at the Museums, as he took all work for the University, very seriously. He systematized the methods of keeping the accounts, then much more voluminous than now, and he kept all the books in his own handwriting. It was only in the comparatively late days of his life that he began to employ a clerk, and I remember well one January in the late 'eighties, when he was in bed with a severe cold—I always believed it was influenza, but J. would never allow that he could have influenza—his sending for the ledgers and day-books, and, with a temperature when most men would wish to forget the world, seeking to balance his accounts. He had a marked gift for arousing the devotion of those who worked for him, in spite of a somewhat unbridled tongue and of an occasional outburst when he really let himself go. No servant ever wished to leave his service, and those who during the last few years of his life helped him to arrange his collections, copied for him, etc., would have done anything for him.

His kindness and genuine care of the Museums staff was paralleled by the interest he took in many of the working men, the clerks, and the sons of Cambridge tradesmen. He had the gift of helping most who came across him and of drawing out their affection. From many letters written to him by his working-men friends I quote the following:

Cambridge,
9th September 1907.

“ Many thanks for your very kind letter, which needless to say I was delighted to receive. I was surprised and sorry to hear that you had got into such a low state of health before leaving England. I hadn’t dreamed of your being run down to such an extent, but it is very consoling to learn that the course you are now on is proving beneficial, and I sincerely trust you will return feeling quite your old self once again, and that the treatment will prove a lasting benefit.

“ I am afraid you will consider me rather a lazy chap having not answered your letter before this, but really I must ask to be excused for leaving it so long; the fact is we have been very busy indeed of late, and when I have finished for the day I have felt too tired to sit down and write even to you, but I meant to write to-day, so have left off early to do so. See!

“ It was very kind of you to enquire of my wife and I am very pleased to be able to send a good account of that lady; she is getting on just fine and seems quite happy about expectations, and is continually preparing for the great event. Every spare moment is devoted to needlework of one description or other to be placed aside ready for the time when it will be required.

" Cambridge is very quiet indeed at the present time; everyone connected with the University seems to be away; but I suppose in a week or two we shall notice them getting back, and then I hope to see you, and *quite well* again."

Of course there is the reverse. It would be idle to suggest that J. had not patent faults. He was very quick-tempered and even passionate—somehow or other nowadays we all seem too indifferent about everything to be passionate—he was also very unbridled in his denunciations. Words—I might say language, as the landladies call it—sprang not only to his lips but from them. J., as we have said, had a hot temper and a considerable command of " language." No man had worked harder for the University in his life than J. had done, and some years before he died he was actively advocating a roofing-in of the east court of the Library in order to provide much-needed book space. But he was bitterly opposed and in the end defeated. His chief antagonist was a professor who, like all his countrymen, had a considerable flow of words. Shortly after the defeat the two met outside Pembroke gateway, and they fell into such a violent controversy, and their language was so lurid, that the passengers of a passing tram rose as one man and implored the driver to stop for fear they should miss a single word! He could, and did, swear, and at times he said very bitter things, mostly with a humorous twist, sometimes at individuals, sometimes at what he called "the malice of inanimate objects," but on the whole these outbursts blew over, and seldom when "things had quieted down" did any rancour remain. Like most eager and intensely busy, vigorous men, he was very impatient; he could never "suffer fools gladly." I am afraid if there was any suffering the fools did it. We who knew him intimately loved him but there were others, and as those who know any man intimately must necessarily be few in number, it remains that he was not universally popular. I remember hearing of a most respected bookseller who, not being able to supply some work which J. wanted at the moment, had to listen to "an outburst": he stood on the doorstep of his shop, wringing his hands and crying so loud that his voice crossed the street: "And think of Mr. Romilly, sir!"—J.'s predecessor from 1832-62. Well, from whatever angle you survey J., he was unconventional. As he was fond of saying himself: "Je ne suis pas comme tout le monde."

CHAPTER XI

EDWARD ADRIAN WILSON (1872-1912)

A COMBINATION OF THE ARTIST AND the man of science is rare, but it is not so rare as one is apt to think, and when it does occur it is often found in men of noble character and of high purpose. Such a man was Edward Adrian Wilson, who perished so tragically with his heroic companions in March 1912 in the Antarctic.

Wilson was born on 23rd July 1872 at Cheltenham, where his father was for many years a leading physician. If, as is but natural, we try to trace back to their origin the two sides of Wilson's intellectual outfit which are the most outstanding—his love of natural science and his skill in art—we shall find that his paternal grandfather was a well-known ornithologist and was especially a collector and student of humming-birds. Many of his specimens were unique and were lent to Gould for his monograph on this group, and, as so often happens, these birds were not returned, but became, probably inadvertently, incorporated with Gould's Collections, now in the British Museum. A great-uncle, brother of him just mentioned, Dr. Thomas B. Wilson, was also a recognized authority upon birds, and is well remembered for his gift to the Academy of Natural Science of Philadelphia of the magnificent collection of bird-skins made by the

Prince de Canino, and purchased by the doctor in Paris.

His artistic bent may have been derived from his father's mother's family, for they all excelled with brush and pencil, or from his own mother, who is first cousin to the well-known Royal Academician, William Yeames. Wilson began to practise drawing at a tender age. As a boy of six he would lie on the floor drawing anything that came to hand, or at times inventing designs out of his head.

Like his uncle, Sir Charles Wilson, K.C.B., K.C.M.G., the Royal Engineer so well known in connection with Palestine exploration and his endeavour to save Gordon at Khartoum, Wilson was educated at Cheltenham College. He entered in September 1886, being placed in the IV form. When he left, in July 1891, he was in the VI form—not the classical VI, but the "special" VI. At school he continued his love of sketching and of observing animal life. The *Records of the Boys' Natural History Society* contain page after page of his careful and accurate observations. He was a great collector of birds' eggs, and his father recalls how often he used to come home with a clutch of eggs or a grass-snake concealed about his person. On one occasion some peewit eggs hatched out in his pockets, and the boy took the young birds straight back to their nest. He acted as Secretary to the Ornithological Section of the School Natural History Society. He not only knew the birds themselves, but he accurately knew their various notes, their methods of perching and their modes of flight. Those who recollect him as a schoolboy recall his singular power of communicating his enthusiasm to others, and the interest and charm which his wide knowledge and intense love of nature gave to his companionship in the field or the forest.

Wilson had gained an Exhibition at Caius College in 1891. He " came up " in October of that year and began to read for the Natural Science Tripos, and the Medical Examinations. I cannot at this time clearly recall him, and yet I have a dim recollection of one whose wonderful drawings in the Biological and Zoological practical classes could not fail to impress the most hardened of demonstrators. Fortunately Dr. Pennington, Dr. Fraser, Bishop Knight, and Mr. H. C. Scott, who all remember Wilson as a student, have been kind enough to help me here.

I gather Wilson as a student was of a somewhat retiring temperament, as indeed he was throughout life. He certainly never put himself forward or made the slightest bid for popularity. He had his circle of close friends, every one of whom was deeply influenced for good by his presence among them, but it was not a wide circle. What is more remarkable is that this influence for better things spread far beyond his immediate associates. He was a rowing man, and in 1894 rowed No. 3 in the College boat, but he was not a conspicuous athlete. At that time the Caius College Shakespeare Society was passing through a phase which all such societies pass through at one period or another of their existence; it was then extremely exclusive, and what may surprise those unaccustomed to undergraduate life is that its exclusiveness did not take the line of confining itself to the more profound students of the Elizabethan Drama in residence, but of closing its doors to all but the leading athletic lights of the time.

It speaks volumes for Wilson's popularity and influence in the College that he was elected into this very select Society. He also took an active part in the other literary and in the scientific clubs of the College. His serenity, his self-restraint, his absence of what eighteenth-century folk called "enthusiasm," yet his obvious uprightness, his unselfishness, and his entire lack of self-seeking commanded the deep respect of all and the lasting affection of his closer friends. He had always a very pleasant smile and a very expressive face, which could, by a swift change of look, let it be known whether he approved or disapproved of a word or an act, and this without uttering a syllable. He never obtruded himself, but he never could be overlooked.

In 1894 Wilson took his B.A. degree, having gained a First Class in Part I of the Natural Sciences Tripos. He remained in residence another three terms, reading for the second M.B. examination. In 1896 he joined St. George's Hospital, and took up his residence at the Caius College Mission House, Battersea. The poorer parts of Battersea were then horribly overcrowded, for the replacing of the slum regions around Sloane Street by middle-class flats had driven the poorer inhabitants across the river. He not only gave all his spare time, but all his spare money, to the Mission. Still he never neglected his work, though he noticeably preferred clinical work in the wards and study in the museum to listening to lectures. He was in all things thorough, and in spite of interruption due to ill-health, he passed his Cambridge examinations without undue mental strain, taking his M.B. in 1900. Whilst at St. George's, Wilson took a full share in the common life of the students. He rowed bow in the hospital four in the Inter-hospital Rowing Cup Competition, and his contributions to the St. George's Graphic Society's Annual Exhibition were very highly valued.

Wilson was of slight build, the most abstemious of men, one who ever kept his body in subjection; yet working double tides was, in time, too much for him, and in 1898 he had more than a threatening of tuberculosis. He spent part of this year at Davos, and the two following summers in Norway as the guest of his friend Mr. Rice. Here he slept and lived in the open air, and made many bird-studies; especially he studied the hawks and the owls—birds that always aroused his interests and commanded his sympathies.

By 1900 he had recovered his health, and after "qualifying," he competed for an appointment on the resident staff of St. George's. He was successful, but it was a two years' appointment, and those in authority, dreading a relapse, advised him not to take it up. Of course this was a bitter disappointment, and equally of course he bore it with his usual serenity.

This disappointment, however, had its silver lining. Had he accepted this two years' appointment, it would have been more difficult, and perhaps impossible, for him to accompany Captain Scott in the *Discovery*, on their first expedition to the Antarctic.

On the last day of July 1901 the *Discovery* left the London Docks and slowly dropped down the Thames. Three weeks before Wilson had married Oriana Souper, the daughter of the Rev. F. A.

Souper, at one time resident at Comberton, near Cambridge. With that heroism, and above all with that patience of waiting which is so often the gift of great women, the bride acquiesced and aided in every way her husband's adventure on both his Antarctic voyages.

The *Discovery* came in sight of the great Antarctic continent on the evening of 8th January 1902. The record of the voyage and of Wilson's part in it has been told in the eloquent words of Captain Scott. I can only add that, if there were two things in his life that Wilson was really proud of, they were that Scott had asked him to be one of the three that made the "farthest-south" expedition and that Scott had asked him to accompany him on his second voyage to the Antarctic.

As far as I recollect, we saw something of Wilson in Cambridge before he sailed in the *Discovery*; on his return he was certainly often with us, using the Library, the Laboratories, and the Museums in working up his results. I think he was one of the best lecturers I ever listened to, and shall never forget a lecture he gave us, shortly after his return, on "Penguins." Of course he had much to tell us that was new to science, but it was his mastery of the subject, his brilliant illustrations, and his quiet but genuine humour, that made the whole thing so supreme a success. For some time he was now busy in lecturing about the country, and in working out the results of the Antarctic voyage. He wrote the section dealing with the birds and the mammals in the Official Report of the Natural History Results of Captain Scott's first voyage, and spent much time at the British Museum, where, as everywhere else, he was very popular.

In the autumn of 1905 he had been appointed, at a most modest salary, field observer, physiologist, and anatomist to the recently established Grouse Disease Inquiry, and from that date until five years later, when he sailed in the *Terra Nova*, I saw him very frequently. The Inquiry was no easy one. Nothing was accurately known about the grouse, either in health or in disease, and it was long before we could either retrace our footsteps from the blind alleys our predecessors had laid down, or free ourselves from the preconceived prejudices of those better skilled in shooting grouse than in keeping them alive.

I do not think the Inquiry could have had a better man, or even one so good. His singleness of purpose and his directness of address, coupled with the undoubted accuracy of his knowledge, commanded at first the respect, and very soon the sympathy both of the moor-owner and of his keepers. Wilson was an indefatigable worker, and, besides visiting almost every important moor in Scotland, and many in England, he dissected with his own hands but just under 2,000 grouse, and recorded under a dozen different headings the physical and pathological conditions of the bird with a minuteness that would put the most enthusiastic panel-doctor to shame. He thought nothing of sitting up all night on the moor to obtain a better knowledge of the sleeping and waking habits of the grouse and her chicks. I am reminded that he slept one May night on a Forfarshire moor in order to obtain one or two drops of dew for the microscope. It was bitterly cold, but there was no dew.

Many and many a time I have rushed up North to spend a few days with Wilson in his laboratory, hastily improvised in some Highland inn, or in a station hotel (we were not at all popular in station hotels), or in the gun-room of some moor-owner's castle. I think Wilson worked as hard as ever man did. We made many mistakes, we followed many false scents, but we were always learning, and, in the end, his work, aided as it was by the constant care and criticism of the chairman, Lord Lovat, and of the secretary, Mr. A. S. Leslie, not only elucidated the cause of adult grouse-disease,[1] but threw a flood of light on the relations of the bird to its surroundings, and on the economics of the grouse-moor. Those were good days; I would they were back again.

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[1] Dr. Leiper greatly assisted the Inquiry in this, and Dr. Fantham did the same by describing the cause of the mortality of grouse-chicks.

Of the two quarto volumes which form the Report of the Inquiry, Wilson wrote quite one-third, and the beautifully coloured plates were all drawn by him. He left, on his second Antarctic voyage about a year before the Report appeared: some of his unfinished work he took with him, and posted back to us from the several stopping-places; others he left to us to prepare for press.

I shall never forget with what pleasure we sent out the volumes to meet him at the base-camp—a little nervous, perhaps, as to what he would think of the way we had edited two or three of his chapters, which he had been forced to leave unfinished, but knowing how eagerly he looked forward to handling the volumes.

In his last letter to me (dated 29th October 1911), written two days before the Polar party started on their "southern trek," he says: "I shall be frightfully keen to see if the mail brings me a copy of the Grouse Report!" The mail did bring the copy, but he never saw it.

The plates in the Report hardly do justice to Wilson's skill as an artist. Although for the most part they are unusually successful examples of the three-colour process, the reproductions naturally fall far behind the originals. The same is true of the illustrations in Mr. Barrett-Hamilton's edition of *Bell's British Mammals*, for much of the charm of the originals has evaporated. With these drawings he took infinite pains, keeping bats in his bedroom to observe them day and night, visiting us near Windsor Forest to draw the deer, and voyaging to the Shetlands to sketch whales.

Wilson's sense of colour had been developed by a patient, and for some time a daily, study of Turner in the National Gallery. He always had a sense of form, and he had a real gift of putting on paper what his clear, calm eyes saw. He could in a subtle way indicate life or its absence; motion or rest; in his brilliant sketches of the Antarctic, you could see the weather.

His scientific work was on the same high level. "Prove all things, and hold fast to that which is good," was his habit. He made no revolutionary discoveries, he opened out no new realms of knowledge, but within the limits he set himself, his work was of a high standard, and, like everything about him, thoroughly sound.

It is not for me to attempt to write of the last long journey, but I cannot withhold a few lines written about Wilson by Captain Scott, dated early in October 1911, the month they started their walk to the Pole:

October 1.
Winter Quarters.

" I never saw him looking fitter than he does at this moment, after the winter darkness and one of the hardest sledge journeys on record. I will not dwell on his value to the Expedition because you must know it, and I hope you realize how much I appreciate it.

" The past year has only increased the general affection and esteem in which he is held by all. . . .

" Even to you I have no words to express all that he has been to me, and to the Expedition—the wisest of counsellors, the pleasantest of companions, and the loyalest of friends."

Amongst his many fine qualities, his quiet simplicity and directness and his absolute loyalty and honesty of purpose stand out. He was not blunt or abrupt in any way, but it simply never occurred to him to finesse or—well, to use the methods familiar to politicians. His disposition was unusually serene, steadfast, and happy. I have never known him angry, and hardly ever put out. He never fussed. If something went wrong, and he could not put it right again, he simply did the next best thing, often without a comment. Though the most modest of men, he knew—but he never exaggerated—his own powers, nor did he underestimate them. With his frail body and his artist's hands he travelled and he worked throughout those long Antarctic voyages, but it was the brain and the will-power, which he knew and he alone knew, that carried him along. He was singularly unselfish, and although he enjoyed solving problems in Natural History or in Pathology, he never thought of his own reputation. He never sought recognition; in fact, I doubt if it ever occurred to him that his work merited recognition in any form. In the best sense of the word he was an optimist, and never worried or troubled about the future. I cannot remember that he ever talked about religion; yet if it be religion to dedicate one's life to " whatsoever things are true, whatsoever things are honest, whatsoever things are just, whatsoever things are pure, whatsoever things are lovely, whatsoever things are of good report "—if this be religion, I have never known a more religious man.

Both morally and physically he was fearless; and here again I do not think it ever occurred to him that anyone could be otherwise. Like his religion, his high courage was part of himself, inherent in him.

To him death was but a step, a change to something further, something better, and the death of a relative or friend hardly ruffled his trustful serenity.

Of his own death I cannot write. Browning foresaw it:

“ Fear death?—to feel the fog in my throat,
The mist in my face,
When the snows begin, and the blasts denote
I am nearing the place,
The power of the night, the press of the storm,
The post of the foe;
Where he stands, the Arch Fear in a visible form,
Yet the strong man must go:
For the journey is done and the summit attained,
And the barriers fall,
Though a battle's to fight ere the guerdon be gained,
The reward of it all.
I was ever a fighter, so—one fight more,
The best and the last!
I would hate that death bandaged my eyes, and forbore,
And bade me creep past.
No! let me taste the whole of it, fare like my peers
The heroes of old.
Bear the brunt, in a minute pay glad life's arrears
Of pain, darkness, and cold.
For sudden the worst turns the best to the brave,
The black minute's at end,

And the elements' rage, the fiend-voices that rave,
Shall dwindle, shall blend,
Shall change, shall become first a peace out of pain,
Then a light, then thy breast,
O thou soul of my soul! I shall clasp thee again,
And with God be the rest!"

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